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Campbell Oration

ON

PROGRESS IN UROLOGY.

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SURGEON TO THE ROYAL VICTORIA HOSPITAL, AND PROFESSOR OF SURGERY IN THE QUEEN'S UNIVERSITY, BELFAST; PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND.

REMARKABLE advances have been made in urology since those of us who were contemporaries of Robert Campbell were students together. In those days the cystoscope was occasionally shown to us by our teachers as a sort of interesting toy which, like many another piece of apparatus, would in due time find its way to the scrap-heap. While thinking out the subject matter of this lecture, I took up a text-book of surgery in general use in my student days. There is not a word about the cystoscope in the chapters devoted to injuries and diseases of the urinary organs, and I cannot even find the word in the index. To-day we fairly bristle with cystoscopes, and a patient is fortunate if he escapes the ordeal of cystoscopy whatever his complaint.

In tracing the development of urology and the evolution of the cystoscope and urethroscope, frequent reference must be made to the work and writings of two great English-speaking urologists: Hurry Fenwick in England and Hugh Hampton Young in America. It would serve my purpose well if I had time and space to quote word for word the opening chapters of Fenwick's work entitled: "The Electrical Illumination of the Bladder and Urethra,"[1] published in 1889, and a paper by Young entitled: "The Renaissance of Urology,"[2] published in 1916. Young's account of the early history of urology is so full and interesting that I cannot do better than quote freely from it.

UROLOGY IN ANCIENT TIMES.

Urology was perhaps the first branch of surgery practised in ancient times. The inhabitants of India over a thousand years B.C. used the catheter to relieve retention of urine and the sound to dilate strictures. They were also, apparently, quite proficient in the operation of perineal lithotomy. In the Hippocratic writings (460 B.C.) will be found accurate descriptions of the formation of urinary calculi, of lithotomy and nephrotomy—and this at a time when practically no other operations upon abdominal viscera were attempted. By the Hippocratic oath the general practitioner was required to promise never to perform lithotomy, but to leave the operation to those who made a specialty of it. At the beginning of the Christian era operations for calculus, retention of urine, and urinary fistula were well conceived and skilfully performed. During the Middle Ages, while medicine was in the hands of the monks who disdained surgical operations, the practice of surgery was kept alive by the lithotomists. During this time the inhabitants of the town of Norcia, who were skilled lithotomists, were summoned to all parts of Europe and were frequently in the service of municipalities. The operation for stone, which up to this time had been almost entirely in the hands of these itinerant laymen, was finally taken up by the medical profession, through the work of a French surgeon named Germain Colot, about the year 1460. He went to Italy, ingratiated himself with a family of lithotomists, learned their methods and returned to France, where he commenced a series of experiments upon the cadaver, the results of which he reported to the medical faculty of Paris. He then applied to Louis XI. for permission to operate on a criminal condemned to death. Permission being granted, the operation was carried out in the churchyard, in the presence of the King. The patient made a good recovery and Colot was decorated by the King, appointed royal lithotomist, and became the father of a family which furnished France with its chief lithotomists for three hundred years. Although medical men, they kept the secret to themselves, just as the Norcians had done, until François Colot, the last of the family, gave the secret to the medical world in 1727.

General surgeons at this period seemed unable to make a success of lithotomy, so that the operation again passed into the hands of laymen, one of whom, a monk named Frère Jacques, marvellous to relate, invented and introduced the lateral operation for stone which requires far more precision and expert knowledge of anatomy than the median operation which was previously used. The story of Frère Jacques, his meteoric rise at court, the crowds that assembled to see his lightning-like procedures, his admission to the great hospitals of Paris (notwithstanding the protests of the surgeons), and his final departure in disgrace because most of his patients died, says Young, is one of the most thrilling histories of surgical literature. Frère Jacques died in 1720, and his operation, perfected by the English surgeon Cheselden, is notable as being based on the best anatomical principles. To this day the non-medical lithotomist flourishes in the East, and it is extraordinary how major operations in surgery have been largely left to uneducated persons. The famous Ambroise Paré learnt the operation of lithotomy from a Colot, and was one of its most accomplished exponents.

JOHN HUNTER AND AFTER.

Young pays great tribute to John Hunter as a pioneer in genito-urinary surgery. He says: "It was not until John Hunter came that the solid foundations of scientific surgery were laid." It is interesting to note that at that time there were two great surgeons in England, William Cheselden and James Douglas, who owed their reputation chiefly to their operations for stone. Hunter became the pupil of one of these, Cheselden, the author of the present lateral operation for stone, which he was able to perform in 54 seconds. It is very evident from a study of the clinical works of Hunter that his practice was largely genito-urinary in character. It was Hunter's custom to admit young men into his home as pupils, and it is not surprising to find that of these men who afterwards became famous the majority were particularly interested in genito-urinary surgery.

The history of urology in France during the eighteenth and nineteenth centuries comprises the work of almost all the celebrated surgeons of that period. Time will not permit me to mention the work of all who took part in the evolution of urology in France, but certain names, which include Civiale, Mercier, Maisonneuve, Guyon, and Albarran, are familiar to medical students of to-day in connexion with some special operation or some ingenious instrument. The most important invention of this time was that of stone-crushing by Civiale in 1818. Mercier's work on obstruction at the vesical neck and the ingenious instruments he devised were of great importance, but according to Young it was to Civiale first, and later to Guyon, that the medical profession owes most of the solid foundation upon which the superstructure of modern urology has been reared. Sir Henry Thompson in England, a brilliant pupil of Civiale, pursuing the careful research methods of John Hunter in anatomy and pathology, did more perhaps than any one man in the nineteenth century to bring urology into the very forefront of surgery.

It was not until about the middle of the nineteenth century that America, now one of the most progressive schools of urology in the world, began to exert an influence on this branch of surgery. About this time

there were several surgeons in America who had achieved great success as lithotomists, and of these special mention must be made of Bigelow, who revolutionised the treatment of vesical calculus. In 1878, at Boston, he began his great work on lithotrity by inventing stronger and more efficient lithotrites and introducing a powerful evacuating bulb by means of which the stone, broken into small fragments, could be completely removed. It may be news to some of us that the name "litholapaxy," by which the operation is now known, was suggested by Oliver Wendell Holmes.

Towards the end of the nineteenth century Austria and Germany entered the field of urological research. About this time Simon of Heidelberg began his epoch-making work on the kidneys. No one knew at this time whether a kidney could be removed with impunity. Simon set to work to solve the problem, and performed nephrectomy in a series of 30 dogs. The results placed the operation on a sound basis. The operation was then carried out with success by Simon in a young woman with a ureteral fistula. This was in July, 1869, and is, so far as I know, the first recorded case of nephrectomy in the human subject. The operation, however, owing to its great mortality, made little progress, so that as late as 1879 Pilcher was able to find only 15 cases in the literature. The reason for the failure of nephrectomy to find a place in surgery was due in the main to sepsis, but the work of Lister in 1867 soon began to exert its influence, and the surgery of the kidney was assured. In 1885 Samuel D. Gross collected 450 cases of operation on the kidney and found the mortality of nephrectomy for various diseases to be between 20 and 60 per cent. The present mortality ranges between 1 and 5 per cent.

Modern Urology and the Cystoscope.

The period of modern urology was ushered in by the invention of the cystoscope by Nitze in 1876. In 1879 Edison's invention of the incandescent electric bulb paved the way for the perfection of the cystoscope and the accompanying array of ingenious apparatus now at the disposal of the urologist. The first attempt at endoscopy was by means of hollow bone urethral tubes through which sunlight was admitted. The history of vesico-urethral endoscopy is given by Hurry Fenwick in his work entitled "The Electrical Illumination of the Bladder and Urethra," and I will endeavour to give a short abstract of his account of the evolution of the cystoscope and urethroscope.

The first period commenced in 1805 with the invention by Dr. Bozzini of an apparatus which he termed the light conductor. Although the instrument was condemned by the Medical Faculty of Vienna on the ground of insufficient illumination the idea was grasped by the profession and a long list of investigators added to the literature of the subject and attempted to improve the instruments for visual examination of the bladder and urethra. Thus John Fisher of Boston, in 1824, invented a hollow metal tube with a reflected light, Paul Ségalas, in 1826, demonstrated before the Academy of Science of Paris an improved urethro-vesical speculum, and many others suggested and carried out various modifications and improvements.

The second period was opened in 1853 by Desormeaux, who is called "the father of endoscopy." This surgeon brought before the Academy of Medicine at Paris the first practical endoscope, and did much to further the development of the science of endoscopy. In 1865 F. R. Cruise of Dublin[3] made an important improvement in the Desormeaux endoscope. This consisted in concentrating upon a reflector the edge of the flat flame from an ordinary paraffin lamp. The apparatus was provided with specula through which the light from the lamp was reflected to the parts to be examined. To prevent inconvenience from the great heat evolved by the powerful light, the lantern was made of mahogany. The cannula for the bladder resembled a coudé catheter, with a little window of glass at the angle to permit the transmission of light. Various improvements and modifications of this instrument were made, and Christopher Heath used it at the Lock Hospital in London and introduced it to the profession in England in 1866. Beyond certain changes in the reflection of the light from plane or concave mirrors, and in the source of light, the endoscope underwent but little modification until the commencement of the third, or electrical, period in 1879.

The modern cystoscope owes its success to the use of electric light. Bruck of Breslau, a dentist, in 1867, employed a platinum loop, maintained at a white heat by means of a galvanic current, as the source of light for examining the mouth, and even advocated electric light for examination of the rectum and bladder some years before Nitze had his instruments for the urethra, bladder, and larynx sufficiently advanced to be used on the living subject. The original Nitze cystoscope had many failings when it was entrusted to Leiter, the well-known instrument-maker of Vienna, who simplified and perfected the water-cooling arrangements and improved the light. The result was the famous Nitze-Leiter cystoscope of 1879. This instrument, which was at once hailed by medical men from all parts of the world as a great advance in diagnostic methods, had grave faults, which for a time caused it to fall into comparative disuse. It was made in the form of a bladder sound of No. 21 French catheter gauge, with a sharp elbow and a longish beak. Depending on the part of the bladder to be examined, the window was placed in the concavity of the elbow (for the neck, anterior wall and sides) or in the convexity (for the posterior wall and base). The beak carried the electric lamp, and the shaft contained the telescope, the water-cooling tubes, and the insulated wire from the battery to the lamp. The ocular end was furnished with tubes connected with a water reservoir, so that a continuous stream of cold water could be kept running to absorb the great heat emitted by the platinum loop when in action. The ocular end also had a grip or binding screw for the attachment of the connecting cords from the battery. The heat evolved by the platinum loop was so great that a water-cooling apparatus was absolutely indispensable. To obtain the necessary heating and illumination of the platinum wire, an equable, constant current of a certain intensity was necessary. This could only be obtained from a large and cumbersome battery, fitted with a rheostat. The ease with which the platinum loop fused, even in competent hands, required the frequent services of a skilled electrician. Sir Henry Thompson, while demonstrating its use on a patient at the Royal Medical and Chirurgical Society in 1880, said that the instrument "should be under the care of a person well versed in the use of galvanic apparatus, and competent to adjust, or repair if necessary, the very delicate details which formed the essential parts of this somewhat complicated but very complete instrument." In short, the instrument was too cumbersome, too complicated, too unreliable, and too costly to be of general service to the surgeon, and it failed to achieve immediate success.

The next great advance was when the Edison incandescent lamp replaced the platinum loop as a source of light, and the year 1887 marks an era of which the far-reaching importance can hardly be estimated. From this time onward the instrument was improved from time to time until at the present day it is reliable, almost fool-proof, easily portable, cool even after prolonged use, and highly efficient. Every part of the bladder can now be inspected, the ureters can be easily seen and catheterised, and operations of considerable magnitude can be carried out inside the bladder under direct vision, with the minimum of discomfort to the patient. Similarly, the entire urethra can be inspected and treated, the ejaculatory ducts may be catheterised, and various operations, such as the removal of prostatic obstruc-

tion, urethral polypi, impacted calculi, and foreign bodies can be carried out with very little risk.

Difficulties in Campbell's Time.

A young surgeon commencing practice to-day can have no conception of the difficulties that beset those of us who started practice with Robert Campbell in the diagnosis and treatment of urinary complaints. Stone in the bladder was sometimes, but by no means always, detected by the sound. If it was secreted in a diverticulum or lying behind an enlarged prostate or covered with a coating of muco-pus, it was often unsuspected and the patient's misery continued. Tumours of the bladder, innocent and malignant, could not be diagnosed correctly without open operation, and the connexion between bladder symptoms and a lesion in the kidney could only be assumed by the presence of pain or swelling in the loin. It was not at that time fully realised that, in a large proportion of cases, disease of the kidney might not manifest itself by pain or swelling or, at any rate, not until late in the history of the case. When pain or swelling indicated disease of one kidney, the methods of ascertaining the presence and efficiency of a second kidney were crude and often misleading. Before the cystoscope came into general use various methods were employed to obtain the urine separately from the two kidneys. In the following account of these methods I have drawn largely from the article by Schede in Bergmann's "System of Practical Surgery."[4]

Tuchman was the first to obtain the urine separately from the two kidneys. He succeeded in compressing one ureter at a time, the urine from the other being allowed to collect in the bladder, to be drawn off for separate examination. He employed an instrument constructed on the plan of a lithotrite, which when passed into the bladder was made to slip over the elevation surrounding the mouth of a ureter. The blades were then manipulated so as to compress the ureter. The method proved, as might be expected, very uncertain. Silberman proposed the introduction into the bladder, through a catheter, of a thin rubber bag which could be filled with mercury and used to obstruct each ureter separately. The instrument was never perfected. Weir proposed to compress one ureter temporarily by an instrument introduced into the rectum. Ebermann suggested that this compression should be effected by two blades, one passed into the bladder and the other into the rectum.

Other equally useless methods were tried and abandoned. Even after the invention of the catheterising cystoscope, which required considerable practice and dexterity, attempts continued to obtain the urine from each ureter separately by other methods. The principle adopted in these later attempts was to produce an artificial division of the bladder into halves, each half retaining temporarily the urine from the ureter of its own side. Harris, of Chicago, invented an instrument by means of which a longitudinal fold could be produced at the base of the bladder, so as to form a watershed between the openings of the ureters. A lever was passed into the rectum or vagina to produce this fold, and a double catheter was introduced into the bladder. The halves of this double catheter were separated, after introduction, so that each half drained its own side of the bladder. I have used this instrument, but I cannot say that I have found it very satisfactory.

Luys, of Paris, invented a suitably curved, catheter-like instrument across the concavity of which a band of thin rubber could be stretched by means of a chain, manipulated by a screw at the handle. When the instrument was in position the rubber septum was projected by tightening the chain, thus dividing the bladder into halves, the fluid from each half being received into a separate bottle. I have used this instrument many times but I have not been satisfied that admixture across the middle line could be entirely prevented. When the bladder contained blood, pus, or other abnormal material, uncontaminated specimens from the ureters could not, of course, be obtained.

A similar instrument was suggested by Guyon in 1902 and perfected by Cathelin. Through a slit in the convex side of a catheter-shaped instrument a fine spring could be projected. The spring was covered with a thin rubber bag. The septum thus formed could be made to fit accurately the posterior wall of the bladder. Two fine catheters were passed through eyes in the main instrument so as to emerge on either side of the septum. The fact that this instrument was invented in 1902 shows that the catheterising cystoscope had not yet come into general use.

It is said that Simon was the first to succeed in catheterising the ureters. This was done in the female. He dilated the urethra with specula until he could pass his finger into the bladder. He then felt, with his left forefinger, for the little swelling round the ureteral orifice and guided the catheter into the ureter. Pawlik, again in the female, located the position of the ureters by two grooves, seen in the vaginal wall with the patient in the knee-elbow position and the perineum drawn backwards. These grooves are sufficiently distinct to be used as guides for ureteral catheterisation through the urethra. It is said that Pawlik's method was, for a time, the best available and that many successes were obtained.

Howard Kelly[5] was the first to make a useful instrument by means of which the orifices of the ureters in the female could be exposed and catheterised. The method was published in 1893 and was a great advance on all former attempts. The urethra was dilated to accommodate a speculum and the bladder allowed to fill with air. The bladder was lighted by means of daylight or electric light, reflected from a concave frontal mirror. The method was widely employed until it was superseded by the much simpler one of catheterising the ureters through the cystoscope.

Once the principles of the cystoscope had become established, additions and improvements followed with great rapidity until in a few years it became a very efficient aid to diagnosis and treatment. As instrument-makers, Leiter in Vienna, Wappler in America, Löwenstein and Wolf in Berlin, and Collin and Drapier in France, deserve much credit for advances in the construction of the cystoscope.

Those who have grown up with the cystoscope can have no conception of the thrill experienced by one who, accustomed to the older methods of examination, was privileged for the first time to obtain a view of the interior of the healthy bladder by the new instrument. As he viewed the mucous membrane, with its delicate colouring and its beautiful arrangement of vessels, and watched the rhythmic movements of the ureteral orifices which from time to time drew themselves up and ejected a little stream of fluid from their open mouths and subsided gradually into the resting position, he felt that a great vista of opportunity had suddenly burst upon his astonished gaze. As time went on and he became familiar with the normal appearances, he was able to detect in cases of disease alterations in the colour, thickness, and texture of the mucous membrane, blurring and obliteration of the vessels, and changes at the ureteral orifices, the significance of which he had yet to learn. One of the most fascinating pictures with which he now becomes only too familiar is the papilloma, with its finger-shaped processes into which a delicate system of blood-vessels can be traced, forming one of the most beautiful objects in surgery. Stones in the bladder can now be seen with the utmost clearness, their colour, shape, size, position, and number accurately estimated, and even their chemical composition fairly correctly foretold. These and many other abnormalities of the bladder are now diagnosed with the utmost accuracy and precision, suggesting methods of treatment that would have been impossible a few years before.

In the same way the urethra can be examined in its entire length, the presence and degree of stricture determined, the verumontanum and the orifices of the ejaculatory ducts clearly seen, alterations in the colour, resilience and thickness of the mucous membrane definitely displayed, and the state of the ducts and crypts opening into the canal ascertained. To one accustomed to the clumsy methods of the past, such accuracy and refinement of diagnosis beget an enthusiasm impossible to describe. My own experiences when I was suddenly translated from the darkness of precystoscopic days to the light of modern urology, in 1906, were of the most thrilling description, and from this time forward, as new methods were developed and fresh fields discovered, a perennial series of adventures into the newly found paths of cystoscopy and urethroscopy kept me in comparative contentment during the early and lean years of my professional life.

Disease of the Kidneys Revealed by the Cystoscope.

When the cystoscope became sufficiently perfect and of real practical utility, urologists began to accumulate observations of great interest and importance, so that from visual inspection alone of the bladder and ureteral orifices conclusions of the greatest value could be drawn, not only on the state of the bladder but also on the condition of the kidneys. It was eminently satisfactory to be able to diagnose inflammation and ulceration, the presence of calculi, or other abnormalities of the bladder. But research did not stop here. By careful and repeated observation of the ureteral orifices, their movements and the character of the jets, the surgeon was in many cases able to hazard an opinion on the state of the kidneys. Hurry Fenwick was one of the most brilliant exponents of the art of careful and accurate observation and deduction. His work, entitled "The Value of Ureteric Meatoscopy in Obscure Diseases of the Kidney,"[7] published in 1903, will remain for all time a classic. In the preface he says: "It is not acknowledged—and by many the suggestion is even ridiculed in England—that an electric light illumination of the orifice of the ureter of the diseased kidney can render signal service to the operator. Not only is the bladder declared free from all cause of renal suffering, but the condition of the diseased kidney can be surmised, and the opposite kidney declared healthy or the reverse." Subsequent experience by competent observers has fully justified the claims made by Fenwick. There is no need in these days to labour the point. Every cystoscopist knows that disease of the kidney is very frequently represented in the bladder by easily recognisable changes at the ureteric orifice. In some cases the only objective sign of a disordered kidney is the emission of blood or pus from the orifice of the ureter, and it is well known that this may occur in the absence of pain or discomfort of any kind on the affected side.

The early cystoscope was not provided with a mechanism by means of which the bladder could be irrigated and the medium rendered clear with the instrument in position. This was accomplished more or less satisfactorily about the year 1888. About this time Brenner attempted to catheterise the ureters of females by passing a fine catheter through a tube in an instrument invented by him and made by Leiter of Vienna. He endeavoured to pass the catheter directly into the mouth of the ureter by shifting the whole instrument into a convenient position. In one female he succeeded, but failed in the male subject. Five years later James Brown, Young's predecessor at the Johns Hopkins Hospital, modified the Brenner instrument by passing a curved spring stylet into the ureteral catheter so as to give it the necessary curve for introduction into the ureter, and on June 9th, 1893, achieved the distinction of being the first to catheterise the ureter through the cystoscope in the male subject. Although Nitze was not the first to construct an instrument for ureteral catheterisation, he was the first to construct it on the right principle. In previous instruments the catheter emerged in the long axis of the cystoscope. This made it difficult to direct the catheter into the ureter. Nitze's instrument provided a tube which came off at an angle and directed the catheter towards the ureter when the cystoscope was in position. Casper, in 1895, remedied some of the defects of this instrument and provided means by which the angle at which the catheter emerged from the shaft of the cystoscope could be altered as required. Albarran, in 1897, made an important addition by providing a hinged lever, the position of which could be shifted from the horizontal to the vertical by a screw at the ocular end, thus altering at will the direction of the ureteral catheter. At first, cystoscopes were only provided with arrangements for catheterising one ureter at a time, but soon this was remedied and it was possible to catheterise both ureters simultaneously. It now only remained to improve the lenses, the lamp, and some minor details to render the instrument thoroughly practical and satisfactory for use in patients of either sex. Ureteral catheterisation through the cystoscope soon became a recognised method of diagnosis. This paved the way for the great strides which followed, especially in the treatment of unilateral affections of the kidney. The operation of nephrectomy, instead of being an exceedingly risky procedure, soon became one of the most satisfactory in the whole range of surgery. Allowing for the great improvement in surgical technique which followed the epoch-making work of Lister, a due amount of credit must be given to the attention which could now be paid to the condition of the presumably sound kidney by the ureteral catheter and other methods of investigation. In cases of renal pyuria and hæmaturia the ureteral catheter confirmed the diagnosis made by inspection of the efflux from the ureteral orifices, and in certain cases of albuminuria without pus or blood the condition was located to one kidney. More interesting still is the fact that the urine may be perfectly normal, as shown by chemical and microscopical examination, and yet a lesion may be demonstrated in one kidney by comparing the specific gravity of the specimens of urine taken simultaneously from the two kidneys. For instance, I have seen cases of aseptic renal calculus in which there was no demonstrable abnormality of the urine obtained from the bladder. In certain cases of tumour of the kidney I have seen the same phenomenon, and in hydronephrosis it occasionally happens that the urine, even that obtained by catheter from the affected side, is free from abnormal constituents. I have been interested for many years in the difference in specific gravity on the two sides in unilateral affections of the kidney. [8] [9] Shortly, in a large proportion of cases there is an increased flow of urine of low specific gravity on the affected side. To this phenomenon I have applied the term unilateral diuresis. This sign will be found of great value in diagnosis, especially when the urine obtained from the bladder is normal. A difference of specific gravity on the two sides indicates alteration of function and suggests that the case should be further investigated.

It occasionally happens that for some reason it is impossible to catheterise the ureters through the cystoscope. The bladder may be extensively ulcerated or so irritable that enough fluid cannot be retained, or the medium may be so clouded by blood, pus, mucus, and debris that the ureteral orifices cannot be seen. Various methods to obtain urine from each kidney separately have been devised: Iversen, in 1887, suggested catheterising the ureters through the open bladder; Czerny and Braun employed a temporary fistula of the pelvis of the kidney; Pinner incised the kidney on its convex border, or opened the pelvis and passed a catheter into the ureter for 2 or 3 cm. Other equally unsatisfactory methods have been recommended from time to time. Apparently no one thought of the very obvious and simple method of catheterising the ureters just above

the brim of the pelvis, where they can easily be reached by an operation in the iliac region similar to that used for removal of the appendix. In September, 1923, I ventured on this method of approach in a case in which it was found impossible, from bladder irritability and bleeding, to catheterise the ureters. The ureters were exposed and a small incision was made in each to allow of the passage of a ureteral catheter towards the kidney. The small openings in the ureters were closed by fine catgut at the end of the observation and gave no further trouble.[10] It is very gratifying to find that this operation has been extensively adopted by other urologists.

Tests of Renal Function.

With the march of progress in aseptic technique and in the methods of diagnosis made possible by the cystoscope and ureteral catheter, operations on the kidneys and bladder began to multiply. Surgeons soon found that the kidneys, if at all diseased, were very sensitive to operative interference at any part of the urinary tract. The aid of the chemist, the physicist, the physiologist, and the pathologist was therefore invoked to enable them to assess the functional capacity of the kidney and, if this was found deficient, to take steps to restore it. Various tests of renal function were suggested and carried out, with results which have thoroughly justified the enormous amount of research which has been brought to bear on this problem in recent years. Time will not permit me to recount all the methods which have been employed, but a few may be mentioned.

Estimation of the total quantity of urea secreted in 24 hours has not proved very reliable, for the amount varies greatly even under normal conditions.

Koryani and his co-workers found that the determination of the freezing-points of the urine and the blood gave valuable indications of the work being done by the kidneys. The freezing-point varies, of course, with the molecular concentration of the fluid examined. This test is very complicated and has fallen into disuse.

Mering discovered that an artificial renal glycosuria was produced by the administration of phlorizin. Casper and Richter made use of this discovery to determine the function of the kidney by estimating the amount of sugar excreted after the subcutaneous injection of a given quantity of phlorizin.

Various dyes have been used to determine the kidney function. Methylene-blue and indigo-carmine have been long in use, and the latter is much employed even at the present time. Delay in the appearance of the dye, diminished depth of colour, and prolongation of the time necessary to eliminate the colour from the urine indicate reduction of the excretory power of the kidney. These dyes have also been extensively used to disclose the position of the ureteral orifice by the deep blue colour which they impart to the efflux (chromocystoscopy). In 1910 Geraghty and Rowntree[11] introduced the phenol-sulphone-phthalein test. This is a colour test of great accuracy, and is extensively used in America.

Accumulation of urea in the blood indicates deficient elimination by the kidneys. An estimation of the amount of blood-urea is, therefore, a test of kidney efficiency. The work of Folin and Denis, the American biochemists, so simplified the technique for accurate estimation of blood-urea that the determination soon became a routine measure in urological clinics.

For the past few years Maclean's urea-concentration test has been one of the favourites in this country. Calvert,[12] a graduate of our own medical school, has amplified this test by estimating the range of urea concentration, from the most dilute to the most concentrated, by suitable administration of fluids. Calvert's modification of Maclean's test is probably one of the best in use at the present time.

The diastatic test, the creatinin test, the chloride concentration test and many others are in general use, but time will not permit me to dwell on them.

Radiology.

The discovery of X rays by Rontgen in 1895 and the application of this discovery by Macintyre in 1896 to the diagnosis of renal calculi opened a new era in the study of urological complaints. Every year since, urology has benefited in some new way until, at the present time, it is not too much to say that radiography rivals the cystoscope in importance as a diagnostic measure. One of the first problems that confronted the urologist when shadows were first discovered in the region of the kidney, ureter, or bladder was to determine whether they were actually in the urinary tract or outside it. The opaque ureteral catheter and radiography settled the matter. Stereoscopic or antero-posterior and lateral radiograms defined accurately the position of the shadows relative to the opaque catheter and greatly facilitated the task of the surgeon. Another use of the opaque catheter is to locate foreign bodies lying in or near the urinary tract. In this way the position of bullets or fragments of shell in relation to the kidney or ureter can be accurately determined.[13]

The next great advance due to X rays was pyelography. In 1906 Voelker and von Lichtenberg[14] used collargol, which gives a shadow with X rays, to inject the pelvis of the kidney, and demonstrated its shape, size, and position. This substance was found to be unsatisfactory and various substitutes were tried, the most important of which was thorium. Since 1918, however, bromide and iodide of sodium have replaced former media, and of these iodide of sodium is most used. When a solution is introduced into the pelvis of the kidney, the ureter, or the bladder, or all three, beautiful shadows of the pelvis and calyces of the kidney, of the ureter, and of the bladder can be obtained. Alterations in shape, size and position, filling defects and diverticula can be demonstrated with the greatest clearness.

In the same way, by means of the urethroscope, the openings of the ejaculatory ducts may be localised and opaque media injected into the vesiculæ to obtain X ray evidence of their condition, and the urethra itself may be examined by filling it with the opaque medium. The diagnostic value of these examinations is daily becoming more universally recognised. Pyelography is especially valuable, and as experience accumulates the urologist becomes competent from a study of the pyelogram alone to form an opinion as to the condition of the kidney. He may thus be able to diagnose hydronephrosis, tumours, polycystic disease, tuberculosis and other affections of the kidney.

In this connexion may be mentioned a method of demonstrating the shape and size of the kidney introduced in 1921 by Corelli and Sordella and, independently, by Rosenstein. In a good X ray photograph the outline of the kidney can, of course, be seen, but if oxygen is introduced through a hollow needle into the perirenal tissues this outline is more clearly defined. The photographs thus produced are very striking and will no doubt be of service in diagnosis. Another method is to introduce the oxygen into the peritoneal cavity and take X ray photographs. The outline of the kidney after this procedure is seen much more clearly than in ordinary radiograms. The gas separates the kidney from the adjacent viscera, including the liver or spleen, and enables its shadow to be more easily recognised.

Another function of the cystoscope in diagnosis is intravesical photography. Nitze invented a camera with which he was able to take ten successive pictures of the interior of the bladder. I have experimented with a photographic cystoscope purchased in 1913 from Loewenstein of Berlin. I took a number of photographs with this instrument and obtained clear pictures of the orifices of the ureters, of the blood-vessels, and of calculi, but I could not get good definition of tumours, and inflammatory conditions

could not be satisfactorily shown. During the war I intended to make use of this cystoscope, but I found a far better delineator in the person of Mr. A. K. Maxwell, the well-known artist, who was working in France under the auspices of the Medical Research Committee. He produced some of the most beautiful coloured cystoscopic pictures ever published of gunshot wounds of the bladder.[15] His drawings of gunshot wounds of the kidney, many of them coloured, were of equal merit.[16]

The Cystoscope in Treatment.

For treatment and for operative work[17] the cystoscope and the urethroscope have proved equally valuable. Nitze invented many additions to the cystoscope, including forceps, cauteries, snares, and stone crushers. He devised an instrument with which he was able to snare a polypoid tumour and cauterise the pedicle. Casper, Lewis, Buerger, Beer, McCarthy, Caulk, Young and others have added many ingenious instruments for use with the cystoscope. With these it is possible to remove foreign bodies, fragments of stone, and specimens for pathological examination. Additions have also been devised to dilate or divide the orifices of the ureters, and to perform the operation of litholapaxy under the direction of the eye. Minor operations through the cystoscope and urethroscope are of daily occurrence. By the ureteral catheter the pelvis of the kidney may be drained and irrigated, and by the urethoscope applications may be made to the utricle and, by means of a syringe and special cannulæ, the ejaculatory ducts may be catheterised and injections made, for therapeutic purposes, into the ampullæ and seminal vesicles.

The Use of Diathermy and Radium in Urology.

In 1910 Beer[18] revolutionised the treatment of papilloma of the bladder by the use of the high-frequency current applied through the cystoscope. With the improved apparatus now at our disposal even multiple papillomata can be efficiently treated while the patient walks about and carries on his ordinary vocation. The advantages of this highly important discovery lie not only in the comfort and safety with which the treatment can be carried out, but also in the fact that a recurrence can be dealt with at the earliest possible moment without damage to the urethra, the abdominal wall, or any other part. The current is applied through a platinum-tipped ureteral catheter, and it is one of the thrills of surgery to see the leaves of the papilloma crumple up like singed feathers when the charged electrode is brought into contact with them.

For malignant tumours of the bladder, treatment by diathermy is only rarely applicable, but modern surgery has so progressed that it is possible to remove half, three-quarters, or even more of the bladder, together with the infected lymph channels and glands, the remaining portion expanding in a few months to accommodate itself to the altered conditions. Other uses of diathermy are to enlarge the ureteric orifice to allow of the passage of a calculus, and to treat resistant ulcers in the bladder, such as those due to tuberculosis.

The discovery of radium in 1898 by Professor and Madame Curie opened up another fruitful field in the therapeutics of urology, but it was not, I think, until 1911[19] that results began to be published. Since that time many ingenious instruments have been devised by means of which, through the cystoscope, radium in the form of emanation seeds or element in small needles can be placed in any part of the bladder for the cure of simple papillomata or malignant growth. At the Johns Hopkins Hospital, in which the first practical application of this method was made in 1914, many hundreds of cases have been treated, with results which show that radium applied through the cystoscope is one of the most important and successful methods at our disposal for dealing with tumours of the bladder.

Nephrotomy and Prostatectomy.

The treatment of renal calculi by modern methods is another of the triumphs of surgery. Sir Benjamin Brodie, writing in 1842,[20] says: "Some of the old surgeons have spoken of an operation for the extraction of calculi from the kidney. The proposal is absurd and dangerous." To-day the operation is almost without mortality if done before the calculi are allowed to block the ureter or to grow to such dimensions that extensive nephrotomies are required to release them.

Prostatectomy has proved a priceless boon to a large section of men who have passed the prime of life. Before the days of prostatectomy the condition of some of these patients was pitiable in the extreme, and many of them were willing to submit to any procedure, however drastic, that held out any prospect of relief. Partial prostatectomy, by the suprapubic route, was performed by surgeons long before complete enucleation was thought of. Amussat in 1827, Dittel in 1885, Belfield in 1886, and McGill in 1888 paved the way for the modern operation, which appears to have been first performed by Eugene Fuller of New York in 1894. P. J. Freyer undoubtedly first launched the operation in England in 1901 and by his strong personality and strenuous advocacy, combined with his own remarkably low rate of mortality, established it on a sound practical basis. Freyer must, therefore, be considered a pioneer in the operative treatment of prostatic hypertrophy.

Perineal prostatectomy was similarly foreshadowed by attempts at removal of portions of the gland at different times, commencing with Covillard who, in 1639, appears to have torn away a portion of the prostate after perineal lithotomy. Sir William Ferguson in 1849, Billroth in 1867, and others followed but, according to Young,[21] Goodfellow, who performed the operation in 1891, deserves the credit of being the first to make a success of it.

The French school, represented by Proust and Albarran, exposed the prostate in the perineum and excised it piecemeal, but the operation of conservative perineal prostatectomy was finally developed in 1903 by Young of Baltimore, who still remains its most brilliant exponent. Young has also invented a cautery punch for cases in which the obstruction is due to a median prostatic bar. By this instrument the obstruction can be removed without disturbing the lateral lobes of the gland. The operation is an endo-urethral one, and has been carried out in a large series of cases with remarkably good results.

Finally, mention must be made of the endo-urethral method developed by Georges Luys of Paris in 1914.[22] His method, "forage de la prostate," consists in removing through the urethroscope, by means of the galvano-cautery or by diathermy, those portions of the prostate which obstruct the outflow of urine. If the results claimed by Luys are obtained by other surgeons, this method of treatment should become a useful addition to the resources of the urologist.

The mortality records of Freyer, Young, Thomson-Walker and other well-known urologists are so good that it would seem almost presumptuous to suggest any improvement in technique, but I have felt for some time that the comfort of the patient might be increased and the incidence of sepsis diminished by a combination of the suprapubic and the perineal operative routes: removal of the prostate by the suprapubic and drainage by the perineal. By this means a continuous stream of fluid can be maintained through the bladder and the patient kept dry during his convalescence. An account of this method, which is at present on its trial at this medical school, has recently been published.[23]

A great medical school is not built up in a day, nor is it given to any one individual to be an outstanding factor in its development, but there are certain men who, by their ability, their foresight, their devotion, their industry, their unselfishness, and their personality, make a lasting impression on

its progress. We recall with pride the names of such men as Thomas Andrews, Alexander Gordon, Peter Redfern, James Cuming, W. A. McKeown, Johnston Symington and others, who played no small part in building up the reputation of the Belfast medical school. No one will deny to Robert Campbell the right to stand as a peer among these great men who, in spite of many obstacles, materially advanced our standing as a centre of medical education. With men of the stamp of Robert Campbell to represent us in the world of medical science, the future of our medical school is secure.

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OBSERVATIONS ON THE BRUIT D'AIRAIN (COIN SOUND, BELL SOUND).

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THE *bruit d'airain*, or, as it is commonly called in this country, the coin sound, is the most distinctive and the least understood of the pulmonary acoustic phenomena. It can be heard only when an air-containing cavity (a pneumothorax, a pulmonary cavity, and very rarely a pneumo-pericardium) is present in the thorax. The sign is not constantly obtained in pneumothorax, even when complete collapse of the lung exists. That is to say, the presence of the bruit d'airain is diagnostic of an air-containing cavity, but conversely the absence of the sign does not exclude the presence of such cavity. It was this fact which led to the study of the present series of cases in order to determine if possible the physical or pathological factors governing the incidence of the sign.

It will be convenient at the outset to state or re-state the following facts concerning the bruit d'airain, about which fairly widespread misconceptions have arisen since its original description.

1. The bruit d'airain is one of a group of metallic phenomena which may be heard in the thorax under varying conditions. The other members of the group are: (*a*) amphoric breath sounds; (*b*) metallic vocal resonance, either of the whispered or spoken voice; (*c*) metallic or tinkling crepitations; and (*d*) the (Hippocratic) succussion splash. All these signs are associated with the presence of an air cavity or cavities in the chest. For the production of tinkling crepitations and the succussion splash, fluid or secretion is a necessary additional factor.

2. The bruit d'airain is a clear ringing musical note exactly like that made by striking a sharp blow on a brass vessel (French: *airain* = brass), and it is elicited by listening over the anterior or posterior wall of the chest while an assistant percusses or taps two coins together on the same or opposite wall. Although it is more convenient to use two coins it must be emphasised that the note produced by two pieces of wood, or by simple digital precussion, is of exactly the same musical pitch and quality as that produced by percussion with coins, whether gold, silver, or copper.

3. Over some pneumothorax cavities a dull, wooden, non-musical note is sometimes heard. To this sound the term *bruit de bois* has been given by French clinicians.

4. In some cases of hydropneumothorax the bruit d'airain may be obtained over the air space down to the level of the fluid, but over the fluid itself a higher pitched, fainter, silvery note may occasionally be heard. To this is given the name of the *signe de Pitres* or the *signe de sou*, described by Sieur [1] in a Thèse de Paris in 1883.

Historical.

Laënnec,[2] in his "Traité de Médiate Auscultate," gave an excellent description of the physical signs of pneumothorax with the exception of the bruit d'airain. This sign was first described in April, 1857, in an anonymous paper [3] entitled "Pneumothorax—nouveau signe pathognomique de cette affection." The writer reported a case of pneumothorax and said that a sign was present which had been discovered and reported several years before by A. Trousseau. It was obtained by auscultatory percussion, and the resulting sound was so intense as to hurt the ear, resembling the note given out by a brass vessel when struck sharply. He further stated that the sound was pathognomonic of air in the pleural cavity. Boursot,[4] in 1883, dealt with the bruit d'airain, and concluded that one of the most important signs of pneumothorax is the sound elicited by the combined percussion and auscultation of the anterior region of the chest. Harris,[5] in St. Bartholomew's Hospital Reports of 1887, reports five cases of spontaneous pneumothorax, and makes the following note about the bell sound:—

> "In conclusion I may remark that in my experience the bell sound is generally absent *at first*, and that it is then generally heard over wide areas. Later on the sound becomes more localised in extent and can only be heard on very careful and minute percussion with coins over the whole chest. Not infrequently, however, the bell sound may be replaced as the case progresses by some less clear sound, which is exactly like that made by a hammer striking an anvil. I do not know whether this sound has previously received such a name but I always call it the anvil sound."

In 1896 Chauffard [6] reported a case of left-sided pneumothorax following a violent movement of the left arm. The patient was admitted to hospital on the fifth day after the onset. No fluid was present. The whole chest was tympanitic with the absence of the respiratory murmur and vocal fremitus. No metallic phenomena, no tinkling, and no succussion splash were present, *but a splendid bell sound was obtained*. Hoover,[7] in 1898, considered that the coin sound depended, not on the tension of the gas, but on the tension of the walls of the cavity. In 1895 Osler [8] reported a case of chronic tuberculosis with a large cavity in the right upper lobe, with thickened, adherent pleura. In this patient during life the coin sound was heard with great intensity. Until this time the general idea was that the sign was distinctive of pneumothorax.

Emerson,[9] in his masterly and exhaustive monograph on pneumothorax in 1903, reports 48 cases, and in his section on the coin sound remarked that "it should be borne in mind that for the sound of the tap of the coins to be very clearly transmitted does not make the sign positive. The amphoric quality

furnished by a resonant cavity is necessary." Unfortunately, in his analysis of cases he does not give his opinion as to why the coin sound was heard in some cases and not in others. Owing, however, to the full notes made on each case, we have been able to determine the type of case in which the coin sound was present or absent in his series.

Our analysis shows that 28 of these cases were investigated for the presence or absence of the bruit d'airain. The sign was present in 22 cases, suggestive in 2, and absent in 5. Fifteen out of the 22 positive cases were examples of pyopneumothorax, 5 of them were hydropneumothoraces and 2 were cases of pneumothorax. Of these two cases one was a case of pneumothorax of 12 years' standing without lung expansion. The other was a case of pure pneumothorax in which the bruit d'airain was heard. Of the cases not giving the sign, one was a case of pure pneumothorax and four were pyopneumothoraces before aspiration. No note was made on the bruit d'airain after aspiration.

F. T. Lord,[10] in Osler and McCrae's "Modern Medicine," remarks that the coin sound like amphoric breathing is probably due to the peculiar resonating qualities of the pneumothorax cavity. Fishberg [11] is of the opinion that the coin sound is due to the presence of fluid in the pneumothorax cavity.

Pratt and Bushnell [12] state that "the cavity of the pneumothorax acting as a resonator reinforces the metallic sounds as overtones of its fundamental note, and since the thoracic wall vibrates as a part of the resonator, the sound is heard by the ear, as it were, at the very place of its production." It is clear that this theory is based on the erroneous assumption that coins are necessary for the production of the coin sound. The remarks of Powell and Hartley [13] seem to have been influenced by the same idea.

The Italian physicians have paid considerable attention to the acoustic phenomena of pneumothorax cavity. Morelli [14] and Moron [15] stated that the bruit d'airain is more marked when the intrapleural tension is high. Cesare Minerbi [16] in a series of studies during 1913–14 pointed out that the necessary conditions for the production of the bruit d'airain are: (1) the cavity must be of sufficient volume; (2) the mediastinal and thoracic walls of the cavity must be sufficiently tense; and (3) that the shape of the cavity must be more or less regular.

In a further interesting series of studies, Minerbi, Mongoni, and Benassi [17] showed that in cases of complete therapeutic pneumothorax where the bruit d'airain was present two distinct tones were invariably found,* one a higher pitched tone corresponding to the extreme points of the diameter extending from the interscapular vertebral space to the base of the mediastinum, and a lower tone corresponding to a line joining the apex of the hemithorax to the costal margin—i.e., a high note corresponding to the short transverse diameter of the cavity, and a lower note corresponding to the longer vertical diameter. They also said that these two sounds were only obtained when the intrapleural pressure reached a level between zero and +1 of the water manometer—i.e., a slight positive pressure. Another observation which they made was that in the first 24 hours after re-establishing the pressure in an already complete pneumothorax the bruit d'airain cannot be obtained, even if a positive intrapleural pressure exists.

In a report by one of us (McL) [18] of a case of simultaneous bilateral artificial pneumothorax in which it was possible to study in the same patient the bruit d'airain in two pneumothorax cavities, in only one of which a pleural effusion had occurred, the statement was made that the bruit d'airain or coin sound is elicited in its most marked and characteristic form when the pleura has been thickened or sclerosed by the onset and subsequent absorption of a pleural effusion, either serous or purulent; further, that the main condition for its production, apart from the presence of an air-containing cavity in the thorax, was the hardening and increased elasticity of the wall of the cavity and not the tension in the cavity or the presence of a certain amount of fluid, as other observers had stated.

* In an annotation in THE LANCET (1927, ii., 981) it was stated that in all their cases of complete pneumothorax the bruit d'airain was found. On reading the monograph we find that this is not so. Only those cases in which the bruit d'airain was present were selected for experiment.

Analysis of Cases.

The cases examined in this series were 50 in number, of which 26 were males and 24 females. Artificial pneumothorax was induced on the right side in 28 cases and on the left in 24. In two cases a pneumothorax was induced simultaneously on both sides.

These cases were examined over a period of two years for the presence or absence of the bruit d'airain in relation to varying conditions, such as the development of pleural effusion, the condition of the walls of the cavity, intrapleural tension, selective collapse of the lung, hydropneumothorax, mediastinal displacement, and ballooning of the pleura. The sign has been investigated in all stages of lung collapse ranging from just after induction, when the air space in the pleural cavity is small, to the period of complete collapse of the lung. Each case was examined on many occasions for the presence or absence of the sign, and it should be noted that at certain stages and under varying conditions in the same cases the bruit d'airain was present at times and absent on other occasions. But in general of the 50 cases, two of which had simultaneous bilateral pneumothorax, the bruit d'airain was present at one stage or another over 28 pneumothorax cavities and in the other 24 it was absent in all stages.

On considering the 28 cases in which the bruit d'airain was heard, it was found that 23 developed pleural effusion during the course of the artificial pneumothorax. Of the remaining five, Case 1 had a previous history of a fibrinous pleurisy and showed signs of a rigid pleura (estimated by the resistance to the pneumothorax needle and by rapid increase of intrapleural pressure during a refill) with bronchiectasis at the left base. Case 7 developed an acute fibrinous pleurisy during the course of pneumothorax treatment. Case 15 showed clinical and radiological evidence of a mediastinal bulge. At this time the bruit d'airain was present but was not heard when the mediastinum returned to the normal position, although the lung was still collapsed. Case 27 did not have a pleural effusion during the course of artificial pneumothorax. A faint bruit d'airain was heard during a period of ballooning of the pleura. This patient also had dense consolidation of the underlying lung. She went to a sanatorium and no further notes are available on the incidence of the bruit d'airain in her case. Case 21 after a refill developed pleural pain which may reasonably be believed to have been acute fibrinous pleurisy. Following this a beautiful bruit d'airain was obtained all over the cavity and was still present two months later.

It is a remarkable fact that in the 24 cases in which no bruit d'airain was ever heard there was no incidence of pleural effusion or fibrinous pleurisy, either before or during the course of treatment. In the majority of these the lung showed good collapse, and in some cases complete collapse.

Pre-effusion Bruit d'Airain.

In four of the series the development of the bruit d'airain in cases where it had not been heard before led to investigation for signs of pleural effusion. In all four cases an effusion subsequently developed.

CASE 12.—The bruit d'airain was present for the first time on Jan. 19th, 1928, after the pneumothorax had been established for eight months. There was no clinical evidence of pleural effusion. On Feb. 23rd fluid was found up to the level of the eighth dorsal spine. On referring to the notes of the intrapleural pressures, we find that on Dec. 19th, 1927, the pressure before a refill was −6 ±0. 525 c.cm. of air were injected and the final pressure was ±0 +6. On Jan. 19th, 1928, the day on which the bruit d'airain was first heard, the initial pressure was −2 +5. 300 c.cm. of air were injected, making the final pressure +8 +16. The sudden increase in intrapleural pressure when only 300 c.cm.

of air were injected seems to be strong evidence that the pleural membrane was hardened and more rigid than normal.

CASES 13, 31, 44 presented the same features as Case 12.

As an explanation of this pre-effusion bruit d'airain we would suggest that the inflamed pleura is in a hyperæmic and turgid state making the walls of the pneumothorax cavity harder and more rigid. This point is illustrated above in the note on intrapleural pressures in Case 12. It would seem, therefore, that the most favourable factor necessary for the production of the bruit d'airain (as we hope to show later) is present in these cases. The shape and volume of the cavity, the actual presence of the fluid, or increased intrapleural tension do not apparently influence the incidence of the sign. It will be noted, especially in Case 12, that the bruit was present (1) when the intrapleural tension was negative (before the refill); and (2) before pleural effusion had occurred.

Post-effusion Bruit d'Airain.

Repeated examinations of the cases which developed an effusion into the pneumothorax showed that in general the bruit d'airain became more intense as the effusion absorbed and as the pleural membrane became drier and more rigid. This was the most common finding in the majority of cases. In a few, of which Case 2 is an example, the fluid was absorbed fairly rapidly without aspiration. In these cases it was found that the bruit d'airain reached its maximum intensity about four months after the onset of the effusion.

CASE 2.—A girl, aged 20, with a left-sided pneumothorax induced on Oct. 25th, 1926, developed an effusion into the pneumothorax cavity on May 20th, 1927. The bruit d'airain was heard in its maximum intensity on or about Sept. 19th, 1927, when the pneumothorax cavity was dry, and the pleura on puncture with the needle was found to be tense and resistant.

In many cases no bruit d'airain was to be heard until the onset of effusion. Four cases illustrating this point are quoted above. When once the effusion was established the bruit d'airain disappeared, only to reappear perhaps faintly as the effusion cleared, but finally as the pleura became rigid and dry the note became more musical and was heard over a larger area.

CASE 3 was that of a man aged 47. Artificial pneumothorax was induced on the right side on Sept. 9th, 1926. Pneumothorax was well established in one month with fairly complete collapse. A small adhesion was present at the extreme apex. On Jan. 18th, 1927 (three months after induction), a radiogram showed that the apex remained collapsed while the lower lobe had almost completely expanded (illustrating the doctrine of selective collapse). One week later he became ill, and developed an aspiration broncho-pneumonia in the right lower lobe. Until April 8th, 1927, no bruit d'airain had been elicited over the pneumothorax cavity. On this date, however, a slight bruit d'airain was heard at the right base. No succussion splash or other signs of effusion could be detected at this time. On May 10th, 1927, the slight bruit d'airain having persisted, a small effusion was discovered at the right base. The effusion did not increase appreciably in amount for some months. Sometimes it appeared that the fluid had been absorbed but it began to reaccumulate in somewhat larger quantities until on April 17th, 1928, one and a half pints of fluid were aspirated and replaced by air. It was noted during the whole of this time of intermittent effusion that the bruit d'airain began to increase gradually in intensity until on May 15th, 1928, a perfect bruit d'airain was heard all over the cavity. At the time of writing a small effusion still exists and an excellent bruit d'airain is heard down to the level of the effusion. The question of the relationship between the incidence of the bruit d'airain and the intrapleural pressures in this case will be discussed later.

Bruit d'Airain in Bilateral Pneumothorax.

Case 20, which has already been reported in THE LANCET,[18] was one in which a girl, aged 17, had simultaneous bilateral pneumothorax induced. The case is of value in relation to the bruit d'airain on account of the fact that in the same patient two pneumothorax cavities were present, in only one of which pleural effusion occurred. The left pneumothorax cavity remained dry throughout the whole period of collapse. On the right side an effusion developed early. The fluid was aspirated and replaced with air three weeks later. Repeated examinations showed that the bruit d'airain developed on the right side two months after the aspiration and became more intense and musical as the pleura became drier and more rigid. The bruit d'airain persisted until the lung was allowed to re-expand one year later. It was present until the cavity became very small—i.e., it could be heard over a partial pneumothorax. On the left side, although the amount of collapse was equal to that on the right side and was more regular, the bruit d'airain was never heard.

Case 40, a man aged 23, in whom bilateral pneumothorax was present, showed the same features as Case 20.

Relationship between Intrapleural Tension and the Incidence of the Bruit d'Airain.

Most observers attribute the fact of the presence or absence of the bruit d'airain to either a negative or a positive intrapleural tension. Widal[19] seems to be in a position of splendid isolation when he stated that the sign was absent when the tension was high and present when the tension diminished. Béclère[20] in 1897 stated that the bruit d'airain was accentuated when the intrapleural tension is increased. Bendove[21] in 1926 found that the bruit d'airain was present in all cases of pneumothorax, whether open or closed, in which the pressure was at atmospheric or above, regardless of the size of the pneumothorax cavity. Although radiograms and histories of illustrative cases indicate that the pleura was thickened in those patients in whom the bruit d'airain was found, Bendove does not mention this as a factor in the production of the sign.

Reference to this series of cases shows that if certain factors are favourable the bruit d'airain is found, whether the intrapleural tension is negative or positive. In many cases before a refill a beautiful bruit d'airain was elicited and on insertion of the pneumothorax needle the intrapleural pressure was found to be negative, e.g., −8 −2. On raising the pressure by injection of air to a positive figure, little alteration was found in the intensity or character of the bruit d'airain. This feature was so constant that the theories stating that a positive intrapleural pressure must be present before a bruit d'airain can be elicited can be dismissed as erroneous.

Reference to the table will illustrate this point.

Case.	Intrapleural tension before fill.		Amount of refill.	Intrapleural tension after fill.		Presence of bruit d'airain.
			c.cm.			
3	−11	−3	400	+10	+16	Present before and not altered by refill.
	− 9	−0	250	+ 5	+11	
4	− 6	+1	375	+ 4	+12	Present before and after refill.
	−10	−3	600	− 3	− 1	Present before—more intense at base after refill.
7	− 8	+1	600	− 1	+ 6	Faint before—more marked after.
	− 8	+0	200	+ 8	+16	Present before—more intense after.
8	−14	+2	200	+10	+20	Present all over before and only over upper zone after.
	− 9	−1	550	− 3	+ 5	
31	− 5	−1	500	0	+ 3	Present before—duller after fill.
	− 5	+1	350	+ 1	+ 7	Present all over before—duller and practically absent after fill.
38	−11	−1	750	− 1	+ 6	Present before and after fill.
40	−21	−7	500	+ 1	+ 9	Present before and after refill.
42	−19	−5	600	− 4	+ 4	Ditto.
44	−13	−5	300	− 8	+ 1	Ditto.

Cases 2, 5, 6, 12, 17, 18, 42 illustrated similar phenomena fully represented by Case 3.

It will be seen that in many cases a bruit d'airain was heard when the intrapleural pressure was negative

(see Cases 38–44). In some instances the bruit d'airain was heard better after the refill, as in Case 4. It will be noticed, however, that even the final intrapleural pressure was negative. In Case 7 the bruit d'airain was heard better after the fill when the intrapleural pressure became positive. These cases are in the minority and the improvement in the bruit d'airain can be ascribed to other factors such as the increase in the volume of the pneumothorax cavity.

Relationship of Bruit d'Airain to the Size and Volume of the Pneumothorax Cavity.

After the induction of an artificial pneumothorax the shape alters and the volume of the cavity gradually increases until, if no adhesions are present, complete collapse is obtained. If the pleural membrane retains its normal thickness and resilience, and neither mediastinal displacement nor ballooning of the pleura occurs, no bruit d'airain is obtained. This is well shown in Cases 22 and 24, in which collapse was induced in a normal lung for the purpose of transpleural operation on a carcinoma of the œsophagus.

Variations in the shape and volume of the cavity depend on several factors:—

1. *Presence of pleural adhesions.*—A firm adhesion in any situation will prevent the uniform collapse of the lung and hence the production of a regular cavity. The situations of adhesions may be: (*a*) apical, (*b*) mid-zonal, (*c*) basal. For instance, in this series of cases 15 had a free pleura with no adhesions, 17 had apical adhesions, 3 had mid-zonal, 3 had basal, and 2 cases showed both apical and basal adhesions. On the remaining six cases no notes as to the presence of adhesions were made. In some instances the adhesions stretched into long ribbon-like structures and did not prevent the even collapse of the lung. In other cases broad, sheet-like adhesions prevented even collapse of the lung and thus altered the shape of the pneumothorax cavity. It is in these cases that breath sounds are well heard locally over the site of the adhesions. Presence of adhesions per se did not appear to have any appreciable influence on the bruit d'airain, except in so far as their presence rendered the patient more liable to the onset of pleural inflammation and subsequent effusion. Apical or basal adhesions, while diminishing slightly the size of the cavity, did not prevent the formation of a fairly regular pneumothorax. Cases in which adhesions did play a definite part in the disappearance of the bruit d'airain were those in which an obliterative pleurisy developed.

2. *Selective collapse.*—The pneumothorax cavity is sometimes altered in shape by the fact that the diseased areas of lung tissue tend to remain collapsed whilst the healthy areas re-expand. In this series of cases where there was radiological evidence of selective collapse no bruit d'airain was heard. In cases which had a pleural effusion this phenomenon of selective collapse was never seen after the effusion had cleared. The explanation seems to be that the whole pleura is thickened as a result of past inflammation sufficient to prevent the re-expansion of the underlying healthy lung. In those cases which never had an effusion, the pleura, being normally elastic, did not prevent re-expansion of the lung. The absence of the bruit d'airain in these cases of selective collapse might be due to irregularity of the pneumothorax cavity. Further reference, however, to these cases shows that when the lung was evenly collapsed by a further injection of air, the bruit d'airain was still absent. This point was well illustrated in Cases 3 and 45. The explanation of the absence of the bruit d'airain seems to lie rather in the fact that the pleura was not thickened and the shape of the cavity played little or no part.

3. *Hydropneumothorax.*—The presence of an effusion into an artificial pneumothorax cavity definitely alters its shape and lessens the volume. If the cavity is completely or almost filled with fluid the bruit d'airain is not found owing to obliteration of the air cavity. If the fluid occupies about a half of the pneumothorax cavity a good bruit d'airain is usually heard above the level of the fluid. In a few cases the signe de Pitres was obtained over the fluid. This, however, was not constantly observed. Biermer's [22] "change of sound" was found in those cases in which there was a moderate effusion and a fairly complete pneumothorax. The sign consists in an alteration of the pitch of the bruit d'airain when the patient is examined both in the horizontal and upright positions.

4. *Mediastinal displacement and ballooning of the pleura.*—These conditions are sometimes produced during the course of establishment of an artificial pneumothorax by the too rapid compression of the lung. A patient with a lax mediastinum is especially liable to these complications. In displacement, the whole of the mediastinum is displaced to the opposite side and in the other case the pleural reflection is ballooned across the mediastinum without there being much displacement of the mediastinum itself. In both conditions the shape and volume of the pneumothorax cavity is definitely altered. A faint bruit d'airain or a bruit de bois is occasionally heard over the base of the pneumothorax in cases with mediastinal displacement. The sign is obtained even in cases with no evidence of pleural thickening. Again, when there is ballooning of the pleura with either a negative or positive intrapleural pressure a faint bruit d'airain or sometimes a bruit de bois may be elicited over the pleural hernia, definitely outlining the shape of the bulge.

CASE 15 was an instance of right-sided pneumothorax in which there was a complete pneumothorax without adhesions or thickening of the pleura. During a period when there was over-displacement of the mediastinum a faint bruit d'airain was heard over the right base. When, however, the mediastinum returned to its normal position, the lung still remaining collapsed, the faint bruit d'airain disappeared.

CASE 27 was an example of partial pneumothorax in which there was ballooning of the pleura but no mediastinal displacement. Over the pleural hernia a faint bruit d'airain was found outlining the curved shape of the distended pleural reflection. When this distension was allowed to contract the bruit d'airain disappeared and was not obtained again up to the time the patient left for sanatorium treatment.

Relationship between Bruit d'Airain and the State of the Cavity Walls.

Thickening and rigidity of the cavity walls most commonly follows purulent or serous effusion into the cavity. Less commonly it results from an acute fibrinous pleurisy, and also from involvement of the pleura over a diseased area in the lung. Consolidation of the lung itself in some cases may cause rigidity of the walls. Temporary rigidity may be caused by an acute inflammatory process in the pleura occurring before the onset of an effusion. In all our cases in which rigidity of the cavity wall was present, bruit d'airain, either localised or generalised, was heard. This constitutes the main point of our thesis.

Relationship between the Bruit d'Airain and the Other Metallic Phenomena.

In some of our cases the metallic phenomena (bruit d'airain, amphoric breath sounds, metallic vocal resonance, tinkling crepitations, and the succussion splash) were heard at one time or another. Sometimes all five signs would be heard in the one case, as, for example, in Case 3, in which there was a consolidated, partially collapsed lung associated with hydropneumothorax. In such a case it was noticed that all the signs possessed the same note in the musical scale, and that the quality or timbre of each note was identical.

In a dry pneumothorax cavity, with the lung completely collapsed and the pleura hardened, the bruit d'airain was the only metallic phenomenon to be heard. If a collection of fluid was present in the pneumothorax cavity, the succussion splash as well as the bruit d'airain was elicited. Amphoric breath sounds were heard: (1) when the lung was partially

collapsed with an area of consolidation around one of the bronchi ; (2) when an uncollapsed pulmonary cavity was present ; and (3) when a broncho-pleural fistula had formed. In no case were amphoric breath sounds heard in the absence of the bruit d'airain. Further, if the amphoric breath sounds were faint and distant or loud and echoing the bruit d'airain possessed similar characteristics. When in addition secretion was present in the lung tinkling crepitations were heard.

In regard to the significance of amphoric breath sounds over a pneumothorax cavity, we are unable to agree with Bendove who regards them as indicating a broncho-pleural fistula in every case. We are convinced that in certain cases amphoric breath sounds are those that would normally be heard as bronchial breath sounds in a consolidated lung or over a pulmonary cavity, with a musical quality imparted to them by an adjacent air-cavity. Again, although tinkling crepitations may in some instances be due to air bubbling up through fluid from a submerged fistula, as some observers state, we are inclined to agree with James,[23] Gerhardt,[24] and Kinghorn,[25] that they are in many cases ordinary crepitations modified by the resonating musical qualities of the adjacent pneumothorax cavity. Tinkling crepitations may also be produced in a pulmonary cavity when its volume and the rigidity of its walls are favourable.

The presence of tinkling crepitations and amphoric breath sounds over a pneumothorax cavity in our experience indicates that the collapse of the lung is incomplete. The bruit d'airain may be heard whether the collapse is complete or partial.

Localised Bruit d'Airain.

In many cases of partial collapse the bruit d'airain was heard only over the base of the cavity, occasionally over the upper zone, and in rare cases over the mid-zone, depending primarily on the situation of the air space. In one case of basal bronchiectasis with complete collapse the bruit d'airain was heard only over the base, presumably because the two layers of the pleura and the lung were thickened only in the lower region. As stated elsewhere, a faint bruit d'airain was also heard at the base in those cases where mediastinal displacement was present.

Discussion.

The term "coin sound" as a synonym for the "bruit d'airain" is misleading and should not be used. It has given rise to the misconception that the clear ringing note obtained is due to amplification of the metallic sounds. "Bell sound" is a better term because its use does not infer that the use of coins is necessary in the production of the sign. It seems best, however, to keep to the original term "bruit d'airain," which was originally described as a phenomenon to be elicited by auscultatory percussion.

The sign, whatever method is used to set up vibrations in the pneumothorax cavity, is a musical note of constant pitch and quality. Each cavity has its proper note—that is to say, that the bruit d'airain is inherent in the cavity and not in the method used to elicit the sign. A further interesting fact is that in some cases all or some of the following signs may be heard—succussion splash, tinkling crepitations, amphoric breath sounds, and the bruit d'airain—and in each case the fundamental musical note is the same for all these signs. The presence or absence of the bruit d'airain depends on many factors which are as yet imperfectly understood. But as a result of the prolonged study of these cases we have been able to establish factors which play an important part. The most important appears to us to be: (1) *The condition of the wall of the cavity*—namely, that the wall should be sclerosed and rigid, a state of affairs which most commonly results from the onset of a pleural effusion into the pneumothorax cavity. If the effusion is absorbed or is replaced by air, the drying and hardening of the pleura, accompanied by a beautiful bruit d'airain, reaches its maximum about four months after the onset of the effusion. From this time the sign persists in similar intensity until the lung is allowed to expand. The hardening of the walls of the cavity can also be ascribed, although less frequently, to pleurisy occurring before the induction of the pneumothorax, to consolidation of the underlying lung, and to acute fibrinous pleurisy occurring during the course of the pneumothorax. (2) *The size or volume of the cavity* is of moderate although not of paramount importance. The bruit d'airain, if present at all, is heard over an area of the chest wall usually in proportion to the amount of collapse. It was noted in a fair number of our cases that the sign was present over the base, probably owing to the fact that the volume of the pneumothorax was greater in that situation. But if the pleural membrane is hardened the bruit d'airain can be heard even over a small cavity. Conversely, if the pleura is not hardened, and the volume of the pneumothorax large, the bruit d'airain is in the majority of cases not elicited. (3) *The shape of the cavity* appeared to play only a minor rôle in the production of the bruit d'airain. (4) *In mediastinal displacement and ballooning of the pleura* a faint bruit d'airain may be heard. The explanation of this, although not quite clear, seems to lie in the combination of three factors—viz., the shape and volume of the cavity and tension on the cavity walls. (5) *Intrapleural tension* is not a factor which determines the absence or presence of the bruit d'airain, but with a positive pressure the sign is usually a little more intense. (6) In *hydropneumothorax* the bruit d'airain is heard when the effusion is small or moderate. In our opinion this is not due to the presence of fluid per se, but to the accompanying hardening of the walls of the cavity.

We have not been able to confirm the observation of Minerbi, Mongini, and Benassi that the bruit d'airain tends to disappear in long-standing cases of pneumothorax. If the pneumothorax is maintained, the bruit d'airain persists, and sometimes in greater intensity as time goes on. Nor have we confirmed their remark that the sign disappears in the 24 hours following a refill. In practically all our cases when the sign was present before the refill it was heard afterwards, sometimes more intense and usually over a wider area. But we agree with their interesting observation that in nearly complete and complete pneumothorax two distinct and separate notes are heard—the lower pitched note corresponding to the long axis of the cavity, and that of higher pitch to the short axis. In our experience the presence of the higher note was not governed by the fact that the intrapleural tension was just above zero. In our cases it was heard whether the tension was positive or negative.

Value of the Bruit d'Airain in Diagnosis.

The first important point to be observed is that failure to elicit the bruit d'airain does not mean that a pneumothorax is not present. Secondly, when the sign is found over the thorax, it gives an indication of the presence of *an air-containing cavity with tense and rigid walls.*

When the mediastinum is displaced the bruit d'airain gives an indication of the amount of displacement. For instance, in excessive displacement the sign can be found extending across the spinal column to the side of the uncollapsed lung. In ballooning of the pleura, the shape and extent of the bulge can be accurately marked out by means of the bruit d'airain. When a hydro- or pyo-pneumothorax is present, the sign is heard down to the level of the fluid, and in this way the amount and level of the fluid can be fairly accurately estimated. In this connexion the bruit d'airain is of much more value than the percussion note, especially in those cases (usually pyopneumothoraces) where a tympanitic or skodaic note is found over the effusion itself.

We wish to acknowledge our indebtedness to Dr. G. T. Hebert, who kindly allowed us to study and include his cases in our series.

(*References at foot of next page.*)

ASSAM'S MALARIA PROBLEMS

AND THEIR SOLUTION.

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IN a recent paper [1] I stressed the importance of *Anopheles minimus* as the main vector of Assam malaria and also the importance of controlling its breeding areas during the malaria season—i.e., in its monsoon or summer resorts. I said:—

"The factor which determines the migration of *Anopheles minimus* from a winter to a summer resort is, of course, rainfall. *A. minimus* migrates to lay her eggs in breeding areas at higher and safer levels, free from the dangers of flooding and flushing. The usual monsoon breeding areas of *Anopheles minimus* are slow-running grassy-edged drains, streamlets and streams, sometimes certain types of seepages, and certain types of tanks. It is interesting to note that in its winter resorts *A. minimus* rarely migrates to low-lying drains. These areas are carefully avoided, like some seepages and swamps, owing to contamination with the products of iron-oxide bacteria. Likewise, certain types of stagnant water contaminated with certain types of algæ appear to be factors in restricting the winter breeding areas mainly to the clear water at the grassy edges of slow-running rivers and perennial streams."

As a result of a further study of the subject it is apparent that two of the factors I mentioned as controlling the breeding habits of *A. minimus*—viz., flooding and flushing—should more correctly be described as water contamination and high velocity of current. It has long been known that certain species of anopheline mosquitoes breed exclusively in clear uncontaminated water. A careful further study of anopheline breeding areas on the terrain under my supervision, which has been regularly surveyed during approximately the past three and a half years, has shown that the breeding habits of *A. minimus* are entirely regulated by the availability of clear, uncontaminated, slow-running, or stagnant water, completely or partially exposed to sunlight. The small pockets at the grassy edges of slow-running streams, streamlets and drains, the edges of grassy tanks, kutcha wells, pools, and borrow-pits; also grassy swamps and seepages if the water is uncontaminated and completely or partially exposed to sunlight, are therefore all potential breeding areas.

[1] Jour. Trop. Med. and Hyg., December, 1929.

This I have recently proved repeatedly and the classification of *A. minimus* as essentially a stream-breeder would lead to many dangerous breeding areas being left uncontrolled. The prevalence of *A. minimus* in slow-running grassy streams and drains is doubtless due to the mechanical filtering and clarifying effect on the water of vegetation (grass and weeds) growing on the banks and sometimes in the bed of drains and streams, in addition to its action in retarding the rate of flow.

Uneven Rainfall.

The solution of Assam's malaria problem is, however, mainly dependent on solving the effects of an uneven distribution of rainfall on the habits of *A. minimus*, the main natural carrier of malaria in Assam. In countries where the rainfall is more or less evenly distributed throughout the year it is obvious that the breeding areas of anopheline mosquitoes will be more or less permanent in perennial streams, swamps, and seepages. In his article on mosquito control in the Federated Malay States, published in Byam and Archibald's "Practice of Medicine in the Tropics," Sir Malcolm Watson writes that "anopheles breeding places are generally well defined, permanent, and easily recorded on a map. They can be abolished at once by appropriate measures." The problem in Assam differs from that in the Federated Malay States, because in Assam anopheline mosquitoes generally migrate from dry-weather to wet-weather breeding places.

The effect of an unevenly distributed rainfall in a country like Assam has to be studied over the same terrain throughout the year, and preferably over a period of years, thoroughly to appreciate the seasonal changes in the characteristics and distribution of surface waters.

At the break of the south-west monsoon there is usually a complete change in the characteristics of the majority of the dry-weather breeding areas. This change varies with the composition of soil and the presence or absence of bacterial or vegetable contaminations. During the cold dry season the undisturbed waters in rivers and perennial streams on low-lying flat land are usually clear. During the monsoon season these disturbed waters are either continually or periodically muddy or laden with silt. Mud and silt and bacterial and vegetable contaminations on low-lying land during the monsoon season are therefore responsible for the migration of *A. minimus* to the uncontaminated clear malariogenic waters at higher levels. Bacterial (iron-oxide bacteria) and vegetable (red and green water-surface algæ) contaminations play a most important part in Nature in restricting the available breeding areas.

The prevalence of bacterial and vegetable contaminations on low-lying land is due to the high percentage of organic matter—i.e., a suitable food supply for these organisms in soils at low levels. Bacterial and vegetable contaminations are present throughout the year on more or less stagnant waters in drains, swamps, seepages, and pools, but are more prevalent during the steamy monsoon season when the temperature and humidity are more suitable for their growth.

The incidence of malaria on varying types of terrain is closely co-related to the clearness of surface water during the malaria season. Some breeding areas are continually dangerous throughout the monsoon season; others are periodically malariogenic, being affected by periodic high velocity of current or periodic contamination; while other areas, due to continual contamination with mud or silt or with vegetable or bacterial contaminations, are constantly free from *A. minimus* and other species of *Anopheles* which breed in clear water.

The importance of water contamination has already been pointed out by Watson. In his book "The Prevention of Malaria in the Federated Malay States," he writes: "Long before I had used oil in ravines I had noticed that the presence of the 'felted alga' meant the absence of *A. maculatus*, and I had noticed its association with pollution of water." The association of felted algae with water pollution is common in Cachar. We have also streams and drains in Cachar where the water, when seen in dry intervals during the rains, is apparently clear but contains felted algæ. A visit to these streams and drains during a heavy shower solves the puzzle. It will be seen that during the downpour the water has become contaminated with silt, often milky in appearance,

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which rapidly sediments after the cessation of the shower. Periodic contamination is also seen on healthy rice land, where the water may appear clear at dry intervals but becomes rapidly muddy during a shower.

A drought in the early part of the monsoon season considerably affects the incidence of malaria on low-lying terrain, for the effect of drought is to retard the period of migration of *A. minimus*—that is, increase of malaria on low-lying land. Likewise heavy rainfall or flooding in the early part of the year drives *A. minimus* from the now contaminated waters on low-lying terrain to the clear water at higher levels (an early formation of summer resorts) resulting in early epidemics of malaria on plateaux and high-lying lands, leaving the low-lying areas surrounded by contaminated waters as health resorts. The result is that during the normal monsoon season we have a paradox: health resorts are areas surrounded by healthy contaminated water, while areas with unhealthy clear water are death traps. Hence, by making drains, tanks, kutcha wells, pools, borrow-pits or other collections of water which remain continually clear during the malaria season mankind has unwittingly created much malaria. When periodically clear and uncontaminated over intervals long enough for the aquatic stages of *A. minimus* to be completed these areas may become periodically malariogenic. On low-lying land malariogenic water during the monsoon season is usually limited to the unshaded grassy clear water tanks used as drinking water supplies. Perennial streams are usually malariogenic only for short periods during the year—i.e., for about six weeks before and about six weeks after the south-west monsoon, but again the period of malariogenicity of perennial streams is entirely dependent on the soil composition of the area they drain and the amount of rainfall before and after the south-west monsoon.

Velocity of Current and Shade.

The second factor, high velocity of current, is an important but unreliable factor in mosquito control because variations in the rate of flow of a water channel are dependent mainly on the amount of rainfall. Further, high velocity of current is liable to erode the banks and bed of a water course and cause pockets or pools. Practical experience has taught me the dangers of pockets and pools. On several occasions I have found *A. minimus* safe and secure in the still water of a grassy pocket of a rapidly flowing stream. I have also frequently found it in the temporary pools left in water courses which only function as streamlets when there is continued rain. These dangerous temporary pools are most common during the north-east monsoon period or for a few weeks after the south-west monsoon. As a practical point when surveying a stream, I advise surveyors to walk against the direction of flow, as *A. minimus* larvæ are more easily caught when undisturbed by movement.

The third factor, the effects of heavy shade, is of the utmost importance when covering clear malariogenic waters. Clear malariogenic waters are usually above flood or contamination levels. The high incidence of fever on high-lying land in Assam has been well known for many years. That it resulted when heavy jungle was cut down and the land cleared for tea-planting was the experience and belief of at least one pioneer tea-planter of my acquaintance. My experience of the diseases among the local hill tribes has also shown me that the degree of malaria among the tribes living on the lower ranges of hills is intense. The reason is obvious when the areas are visited. Annually the hill tribes *jhum* (cut down and burn) the jungle to clear areas for the cultivat' n of hill-rice, thereby exposing streams, streamlets, and seepages. My predecessor, Dr. H. J. Glover, stated in 1910 that the commonest type of malarial attack in Cachar was "jungle fever." As synonyms for "jungle fever" Glover gave "bilious remittent fever" and "clearance fever." Had the "fever" been more appropriately named "jungle clearance fever," the *fons et origo* of the ill-health on many plateau and high-lying tea estates would have been recognised before the pathological importance of hookworms, a common factor on healthy and unhealthy tea estates, became unduly stressed and obscured the true cause.

The reasons why some anopheline species avoid shade whilst other prefer it have yet to be definitely ascertained. *A. minimus*, in common with most other anopheline species, undoubtedly prefers breeding areas where vegetation containing chlorophyll (grass, &c.) can grow, but extensive field experiences have given me the proverbial exceptions which prove the rule. On several occasions I have found *A. minimus* breeding in clear stony pools devoid of vegetation. Recently I also found larvæ sheltering in a small pocket of a stream covered with dense shade, and I have several times found the larvæ of the shade-loving *A. aitkenii* in clear grassy streams exposed to bright sunlight. The explanation in the latter cases is obvious when the areas are studied, as the larvæ have undoubtedly been accidentally flushed from their natural habitats to unnatural breeding places by a heavy downpour of rain. In the case of *A. minimus* the natural, grassy, exposed, known breeding place was only ten yards away from the heavily shaded sheltered pocket.

Laboratory Findings.

The results of my experiments in the artificial conditions of a laboratory have usually been contrary to my field experiences.

In the laboratory I have bred out *A. minimus* in water which was collected from a pool under heavy bamboo shade where the water was apparently contaminated with decomposing bamboo leaves. I have bred it out in darkened almirahs, in the water from "felted alga" streams, and in red iron oxide water, although the larvæ had an initial struggle to break the oil-like film. The thick scum of surface algæ, however, asphyxiates all anophelines—even *A. vagus*, a contaminated water breeder—within a few hours.

Mud and silt from muddy and silty waters rapidly sediment in hatching-bottles in the laboratory and *A. minimus* larvæ readily breed out in the clear supernatant water. Probably in nature, however, silt in suspension asphyxiates anopheline larvæ such as *A. minimus* from blockage of the respiratory organs. In its natural environment a certain degree of sunlight is apparently essential to provide the normal food-supply on which *A. minimus* larvæ feed, but until definite scientific reasons are forthcoming one can only conjecture that the habits of certain species of anopheles vary like those of the various races of mankind, who cease to procreate their species in unsuitable or unnatural surroundings.

Malaria Control.

In discussing the principles of mosquito control (loc. cit.) I stated that the practical application of Nature's methods of flooding or flushing can be artificially obtained in appropriate areas by mechanical means, such as sluice-gates, bunding, straightening streams, and silting loops. I would here like to emphasise the fact that, as a result of a further study of soil compositions, the appropriate areas where Nature's methods can be artificially applied by these means are very limited indeed. Flooding should never be carried out unless the resultant effect is effective water contamination; periodic flushing is liable to make pockets at the edges or leave pools in the stream bed. Bunding may result in a collection of dangerous clear water, and straightening streams, unless in very carefully selected areas, may not only be associated with the dangers which arise from flushing but, owing to increased velocity of the current, may increase the size of subsequent lower loops in the stream course.

For experimental purposes I have selected duranta to shade known dangerous narrow drains and streamlets, while *Cassia nodosa* or *javonica* has been selected for known dangerous broad main drains and streams. Duranta is the thorny privet hedge commonly seen around bungalow compounds. Animals will not eat it and, owing to the dense shade produced when thickly planted, it should simulate the degree of shade which is inimical to the habits of *A. minimus* and prove a cheap and permanent anti-malarial measure.

On broad streams under natural conditions I have found that heavy bamboo shade eliminates *A. minimus*. Unfortunately bamboos, which are used as building materials in house construction and for many other purposes, are liable to have an uncertain existence when they reach maturity in districts where bamboos are annually becoming more scarce. The two species of cassia, especially the indigenous *nodosa*, appear to be the most suitable type of shade for broad channels. These two species of cassia are rapidly growing leguminous trees, giving dense shade; they are deep-rooted, withstand storms excellently, and, like duranta, their foliage is not eaten by animals.

The more I study the malaria problems of Assam the more does the truth of Watson's statements in the Federated Malay States become apparent: "Work which leaves a trail of malaria behind is bad engineering. As we learn more, perhaps the time will come when we shall be able to say to one species of anopheles 'come' and to another 'go' and shall be able to abolish malaria with great ease, perhaps at hardly any expense." Man-made clear water-tanks, kutcha wells, pools and borrow pits, man-made clear water drains, exposed streams and streamlets, and improperly constructed bunds or embankments creating dangerous clear-water breeding areas, swamps and seepages where safe natural thick swamp vegetation has been cleared, are all found on the terrain on which I had been investigating malaria problems.

I have found that low-lying, well-shaded tanks are free from *A. minimus* during the rainy season. On careful examination it will be seen that these tanks are very easily contaminated with mud (rainfall and soil erosion) owing to the absence of a grassy-edged binding, because heavy shade prevents growth of vegetation. I have had no experience of well-shaded tanks at high levels, as all the tanks at high levels on the terrain under my supervision are exposed: I am carrying out experiments in this direction. I have attempted to contaminate clear water-tanks at high levels with surface algæ but, apparently owing to absence or insufficiency of an appropriate food-supply (organic matter) in high-lying clear water, surface algæ rapidly succumb. My researches have also taught me that work which can be carried out with impunity on certain types of soil and strata cannot be carried out on others, and that it is unfortunately easier to create malaria than to eradicate it.

The treatment of Assam's malaria problems is based on a complete knowledge in each area of the factors which are responsible for malaria, hence a thorough survey during the malaria season is absolutely essential. In the absence of definite knowledge of the effect of heavy shade around dangerous clear-water tanks, it is obvious that properly constructed wells or piped water-supplies would eliminate this source of man-made malaria. Dangerous clear-water pools, borrow pits, and functionless drains should be filled in. Exposed dangerous clear-water drains, streamlets, and streams should be covered with heavy shade. Swamps and seepages may be assisted to revert to their safe natural condition by replanting thick swamp vegetation such as tarapat. In many cases, however, and especially in the case of seepages, I have found it more practical—i.e., the areas can be brought more rapidly under control—to adopt Watson's drainage methods than to cover the resultant clear-water drains with heavy shade.

It should be clearly understood that there are in Assam many miles of harmless exposed waters in rivers, perennial streams, and drains; it would be a gross waste of human energy and money to cover these with dense shade or to fill in contaminated pools and borrow pits.

Until biological control can be restored, the cheapest and most effective method of controlling malaria is by larvicides, especially by oiling, but it has to be remembered that the control of malaria by oiling can only be compared to the control of the hyperglycæmia of diabetes with insulin; as soon as treatment is discontinued the disease returns. Further, cessation of control may be attended with disastrous results, owing to an increase in the non-immune population during the controlled period.

Clinical and Laboratory Notes.

A NOTE ON PAIN IN RELATION TO DUODENAL ULCER.

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THE most important factors in the investigation of the cause of that particular pain which is associated with duodenal ulcer are the anatomical disposition of the first and second parts of the duodenum and the behaviour of the contained gas derived from the stomach after a meal, particularly its pressure effect in the first part. There are many types and varieties of stomachs and duodena, no two being exactly similar. In every case, however, the direction and anatomical lie of the first two parts of the duodenum, in relation to each other, are the same. The first part runs upwards and backwards, and is suspended at its termination by the free edge of the gastro-hepatic omentum, being freely movable. From here the second part commences and runs directly downwards, being more or less fixed.

The most extraordinary features of an active duodenal ulcer (by "active" I mean "unhealed") are that, no matter how full the stomach may be after a meal, the patient is entirely free from pain, and it is only when the stomach is nearly or quite empty that he complains of pain. In other words, a large amount of food will pass over the ulcer for hours on end without causing any pain whatever. Another common but nevertheless strange fact is that taking liquid or solid food when pain is present will soon relieve it. Several theories have been advanced to explain the cause of this particular pain, but they are not altogether convincing. Consideration of the possibility of distension of the ulcer-bearing portion of the duodenum by gas coming from the stomach may, however, help to elucidate it. There is always a certain amount of gas in an empty stomach. After a meal this is greatly increased, a fact easily confirmed by percussion. Most of the increase is said to be due to swallowing atmospheric air, but it is not unlikely that there is some actual diffusion into the stomach itself.

In the last 20 cases of duodenal ulcer which came under my care I introduced an Einhorn's tube into the first part of the duodenum, verified its position under the upright X ray screen, and inflated that part of the gut. In each case I was able to satisfy myself that at a certain point of distension the same kind of pain could be reproduced as that complained of by each individual patient. The volume of air introduced in each case varied. These patients ultimately underwent operation.

Pain due to After-coming Gas.

It seems to me, therefore, quite reasonable to suppose that distension by after-coming gas from the stomach is at least one possible cause of pain in active duodenal ulcer. This gas follows the meal out of the stomach, making its way towards the antrum and pylorus, and eventually filling the first part of the duodenum. Distension follows, and pressure in an already over-sensitive ulcer-bearing area of peritoneum results in pain. This pain is not colicky or griping, but rather an increasing ache, gradually reaching a point of maximal intensity, and as gradually falling and diminishing. This is what one may well expect from slow distension. Owing to the localised inflammation accompanying the ulcer, there is a certain degree of paralysis of that portion of the gut. This in itself is sufficient to delay the expulsion of the contained gas, but much more important is the arrangement of the second part of the duodenum. This part, in the erect posture adopted by man, lends itself very effectively to obstructing and resisting the exit of gas from the first part because of its vertical position and

its immobility. The effect is distension followed by pain. The third part of the duodenum offers no such resistance, owing to the slightly upward course which it takes. Food, on the other hand, passes rapidly through the whole duodenum, if it may be assumed that an ordinary meal behaves in the same way as a bismuth feed in cases of duodenal ulcer. The direction of the second part is rather an aid to its progress. As the gas in the stomach becomes less, so does that in the first part of the duodenum. It is slowly evacuated, the distension lessens, and ultimately—although some still may remain—there is not enough to reach that point of distension which will create pain in that particular duodenum of that patient. The duration of the pain depends upon the time which it takes for the volume of gas in the first part to fall below this point.

The ages of my patients ranged from 18 to 53. All except four were males. Six ulcers were situated at the junction of the first and second parts, in the angle between the two. Four were on the posterior surface; two of them were so small that they were only seen on opening the gut. Ten were placed along the anterior surface between the pylorus and the termination of the first part. A partial duodenectomy was performed in three cases, and a gastro-jejunostomy in 17.

The time of onset of the pain bears no relation to the size or position of the ulcer, or to its distance from the pylorus. It simply depends upon the period which elapses between the ingestion of a meal and the beginning of the painful response by the over-sensitive ulcerated area to distension by the after-coming gas.

Treatment Directed towards Lessening Tension.

The more common methods of treatment of duodenal ulcer are:—

(1) *Diet.*—A restricted diet is usually given. This necessarily lessens the intake of air into the stomach. Sippy's method, in my opinion, owes its benefits to the continuous displacement of air at the pyloric end of the stomach. In much the same way the disappearance of pain on taking more food may be explained; it prevents the further addition of gas to the duodenum.

(2) *Drugs.*—Alkalis are freely administered. Their effect, however, is probably due to relaxation of stomach tone, and so to retarding of the passage of gas into the duodenum, rather than to their action in neutralising or diminishing the acidity of the contents of a "duodenal stomach." The accompanying hyperacidity is in all probability not the cause of pain, as this disappears on fasting; the acid content is highest, for instance, in the early morning, and pain does not appear until some time after the first meal. Belladonna is another drug commonly used. One of its principal actions is to relax tonicity, and the effect is much like that of alkalis in delaying the progress of gas into the duodenum. Effervescing drinks merely cause "belching," and so eliminate the gas which is already present in the stomach.

(3) *Posture.*—Rest in bed improves the condition of the patient, and the pain becomes markedly less or disappears altogether. This, I consider, is accounted for by the fact that the second part of the duodenum is changed from a vertical to a horizontal position, thus lessening the resistance to the outlet of gas from the first part.

(4) *Surgical.*—Gastro-jejunostomy is regarded as the most satisfactory form of treatment. I think the effect here is not the neutralisation of the acid by the bile, but the additional opportunity afforded for the escape of gas or some of it through the stoma.

All forms of successful treatment depend upon lessening tension in the first part of the duodenum and so giving rest to the ulcer, and an opportunity to heal. This can be brought about by reducing the intake of air, retarding and preventing the passage of gas into the duodenum, posture, and diverting the gas in the stomach.

Most of the literature on this subject abounds with mass of technical detail and physiological assumption, and although the cases I have quoted in support of my contention may be too few, I feel sure, having observed and dealt with a large number in the past, that the explanations advanced by the various workers in this field do not fit the facts.

I am indebted to Dr. J. B. Higgins, radiologist to the Infirmary, for allowing me the use of his department.

A NOTE ON
HÆMOSTASIS IN THE MASTOID OPERATION.

By N. Asherson, F.R.C.S. Eng.,
Assistant Surgeon, Central London Throat, Nose and Ear Hospital.

In the course of the mastoid operation there are three separate stages in which the operator is confronted with hæmorrhage which has to be controlled before he can proceed. These stages are: (1) the incisional stage; (2) the osteal stage; (3) the plastic stage (in the radical or modified radical operation only). This division is both anatomical and practical, the bleeding being of a type peculiar to each stage.

Incisional stage.—The scalp has an exceedingly free blood-supply, so that incisions bleed very freely; the hæmorrhage is difficult to control and apt to prove more persistent than it is from incisions in any other part of the body. The bleeding arises from an anastomotic network of arteries, taking source from the posterior auricular, the occipital, and the superficial temporal arteries. The usual method of hæmostasis by artery forceps is time-consuming, and owing to the texture of the scalp no easy task. Moreover, ligatures tend to slip easily. An alternative procedure is to incise boldly down to bone and rapidly elevate the flap, ignoring the immediate bleeding, and controlling it by pressure of the retractor.

Osteal stage.—The chief blood-supply to the mastoid air cells arises from the stylomastoid branch of the posterior auricular, entering through the stylomastoid foramen, on the deep aspect of the mastoid process.

In the *plastic stage* the bleeding is from the vascular integument over the auricle, supplied by the posterior auricular artery.

The procedure to be described renders the incisional and plastic stage a bloodless one and will minimise to a surprising extent the bleeding in the osteal stage. It is applicable to adults and children. The method is not applicable to those cases in which a large periosteal abscess is present over the mastoid.

The mastoid area is prepared as usual, shaved and painted with iodine. The hair is kept off the field of operation by a broad strip of sticking plaster along the limits of the shaved area. This plaster is subsequently removed at the termination of the operation, while the patient is still anæsthetised. Ten minutes before the anæsthetic is begun the whole of the retro-auricular (mastoid) area is infiltrated with about 20 c.cm. of novocain solution (1 per cent.) to which about 8 drops of adrenalin solution (1 in 1000) have been added. The infiltration is from the mid-point of the incision, subcutaneous and also towards the periosteum. The needle is also carried along the posterior superior meatal wall and this region infiltrated. Another point to assist in a bloodless operation is to have the patient propped up at an angle of 30°. The sole function of this injection is to secure a bloodless operative field—it is in no sense a local anæsthetic.

The injection of the solution causes an ischæmia of the tissues and this persists for over 90 minutes. The effect produced is similar to that seen in the part of a limb distal to a tourniquet.

Stage 1.—The incision down to bone is through exsanguinated tissues. The exposure of the bone might well be as on the cadaver. There is no bleeding or oozing and no occasion to use an artery forceps: the whole exposure of the osteal operative field is performed in as many seconds as it usually takes minutes in the presence of hæmorrhage. Even

the use of a swab becomes unnecessary in many cases up to this stage.

Stage 2.—As regards the osteal parts, the effect of the injection varies. In all cases the bleeding from the mastoid is minimised, and in some cases the oozing is so slight that the operative field is never obscured. Gentle dry swabbing at intervals will keep the field clear. The injection is carried along the posterior superior meatal wall, and thus the branch of the posterior auricular, which goes via the stylo-mastoid foramen to the air cells, comes under the influence of the injected solution. The vessel is "occluded" by the adrenalin and novocain and thus the blood-supply to the bone is diminished.

Stage 3.—At the end of the operation, when any plastic procedure becomes necessary—e.g., in the radical mastoid—the tissues are still blanched. The separation of the skin from cartilage is bloodless, and the removal of the cartilage therefore becomes extremely simple.

A CASE OF EMPHYSEMA TREATED BY MECHANO-THERAPY.

By A. KELLGREN-CYRIAX, L.R.C.P. & S. EDIN.,
PHYSICIAN IN CHARGE OF THE MECHANOTHERAPEUTIC DEPARTMENT AT THE ELIZABETH GARRETT ANDERSON HOSPITAL, LONDON.

THE treatment of emphysema is still so unsatisfactory that I am encouraged to report the following.

In a series of cases I lately had a patient, aged 73, with undoubted emphysema and history of right-sided basal phthisis as a boy. From the latter recovery was complete, and his health was excellent until six years ago when periodic attacks of bronchitis had begun. In spite of wintering in warm climates he still had bronchitic attacks and gradually became so short of breath that he found walking on the level difficult and upstairs impossible. A recent attack of severe bronchitis had left him sitting bolt upright in bed unable to lean backwards or sideways because of the coughing these movements induced, hence getting very little sleep. He had much pain in the right side on coughing, and had been examined several times in the previous weeks, but no active tuberculosis had been detected; neither could I find any. All the usual medicinal treatment had been ineffective.

When called to him I found all the signs of emphysema. The patient was sitting up in bed, very breathless, with a severe spasmodic cough, a barrel-shaped chest with the usual kyphosis. The chest-wall was immobile, percussion note hyper-resonant, and breath sounds barely audible.

I treated this patient entirely on mechanotherapeutic lines, using chiefly passive and active exercises designed to strengthen expiration and in general to diminish the volume of the chest. These were:—

1. Strong manual vibrations over the front of the chest, and stimulatory nerve frictions on the upper four posterior dorsal nerves which communicate with the posterior pulmonary plexus through the anterior spinal nerves and rami communicantes.
2. During attempted prolonged expiration, intermittent pressures (about 5–9 per expiration) manually, over the upper lobe anteriorly, first gently, then more strongly.
3. Strong manual vibrations over the apices, and gentler vibrations on the trachea to loosen the sputum.
4. Short, sharp flicking clapping with the finger-tips to the chest and firmer hacking with the ulnar edge of the hands between the scapulæ.
5. General abdominal manipulation just below the diaphragm, especially the gastric area.
6. Petrissage and circumduction of the legs to remove œdema.

As soon as the patient's condition permitted the following exercises were added:—

7. The patient semi-reclining, stretching above his head his hands, grasped by the operator, approximated his elbows in front of his face, and during forcible expiration drew them downwards on to his chest, against resistance.
8. The patient sitting upright with straight arms abducted to a right angle, carried his arms forwards during forcible expiration against the resistance of the operator's hands placed on the patient's wrists.

The last two exercises were repeated three times, the pressure of the contracting pectoral muscles assisting expiration. The patient was also told to practise expiration by himself several times daily, a few breaths consecutively.

Treatment on these lines daily for a fortnight resulted in increased elasticity of the thorax, diminution of the barrel-shape and kyphosis, the breath sounds became more audible. The pain in the side had gone and the patient had not coughed for two days. Sleep was good and walking quite easy. Six months later the improvement had been fully maintained.

In the course of 30 years I have treated about 200 cases of emphysema and have failed in but two cases to improve the condition. Even if some of the manipulations may not be known to the practitioner, I believe relief would soon follow merely from *intermittent* pressures on the front and sides of the thorax, provided they are done evenly, gently, and elastically during expiration—followed by exercises 7 and 8.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY: SUBSECTION OF PROCTOLOGY.

AT a meeting of this Subsection on Dec. 11th, Mr. CECIL ROWNTREE, the President, opened a discussion on

COMPLICATIONS OF OPERATIONS FOR PILES.

It might be said, he remarked, that there should be no complications of an operation for piles on an otherwise healthy patient. But patients were not always healthy, and no surgeon was competent all the time. These operations were attended by so little risk to life that they were often undertaken lightly, without a competent anæsthetist or assistant, and by those who were scarcely qualified to carry them to a successful issue. The easier an operation, the greater was the discredit if anything went wrong, and it was essential to be fully alive to the possibilities of trouble, even in a straightforward case. In dealing with patients who were aged, infirm, diabetic, or paralysed, or who had damaged hearts, there was all the greater reason for care in the minutiæ. In a recent book he noted that 18 possible complications and 6 sequelæ were described in connexion with operation for piles. The Section ought to try to settle some of the outstanding questions on which the text-books at present differed. The choice of anæsthetic had been discussed elsewhere a week ago,[1] but it might be noted that the surgeon's position in these operations prevented his keeping a watchful eye on the thoracic end of the patient. Sudden and complete relaxation of the anal sphincter should suggest the need of added watchfulness.

At operation it might be discovered that the diagnosis was wrong or insufficient. The diagnosis should have been established with the proctoscope, but this need was not always realised in practice. There must always be a good light for the operation. If the case was really one of piles and the operation was satisfactorily completed, the surgeon was often confronted by the problem of post-operative pain. Some patients had little or no pain; others had severe pain which he could not account for. A clumsy operation caused more pain than one in which the tissues were gently handled, yet some of his patients had had pain despite his best precautions. Mr. Lockhart-Mummery laid stress on the importance of maintaining asepsis, but the President had not found that pain was abolished in this way. As the pain came on within 24 hours or less, he did not think it could be due to sepsis. Neither did post-operative pain appear to depend entirely on what operation was

[1] See THE LANCET, Dec. 14th, p. 1258.

done. Some said that the cautery operation was less painful than the ligature operation. For a long time he had been employing the latter, and his strong impression was that the pain was less with this, also that the pain was less severe in women than in men, and less in the aged and feeble of both sexes than in the young and vigorous; hence it might have some relation to muscular vigour and to spasm of the levatores ani. If the pain was due to reflex spasm, what induced it? Probably it was a matter of attention to minor details of technique. In applying the clamp it was necessary to make sure that no sensitive nerve-endings were included in it. The question arose whether the sphincter ani should be stretched. The President thought that stretching was a help, but unless it was done very gently, the tissues might be so damaged as to do away with any advantage it would afford. Where pain was present after operation only one drug was available—namely, morphia—and he used it, though he knew that some people were suspicious of it. The doses given were often inadequate; to dole out gr. 1/6th of morphia to a strong 12-stone man was to ask for trouble.

The most dramatic, and perhaps the most important, complication was hæmorrhage. Both recurrent (or primary) and secondary hæmorrhage followed, with varying frequency, every method of operating for piles. Could anything further be done to reduce the already small proportion of cases in which bleeding followed? He could only urge the need for attention to all the small details, such as avoiding bad anæsthesia, discarding ligature material which had been boiled once too often, and operating with deliberation. The strain on the ligatures was very great. The amount of blood coming away at one of these hæmorrhages would astonish the uninitiated, and inspection of the rectum through a speculum during such hæmorrhage needed caution for the observer's own sake. The bleeding-point had to be found and tied, and it was essential to have a good anæsthetic and a number of sponge forceps to grasp the soft and yielding blood-stained tissues without damaging them. Secondary hæmorrhage was more troublesome and more difficult to deal with, and it seemed clear that it was due to sepsis; it was strange that it did not occur more often. In this form of hæmorrhage the difficulty of finding and securing the bleeding-point in what might be a sloughing area was so great that the best results were obtained by plugging or packing the rectum. Sometimes a stricture formed after a hæmorrhage; both might be the result of sepsis in the operation area.

Another complication was retention of urine. Most of the books said that this ought not to occur after a properly performed operation for piles; yet the same books—assuming its occurrence—gave several alternative methods of dealing with it. This complication might follow every type of operation, and it would be well to know how it could be avoided. He thought it was partly the fault of the surgeon, and that trauma was a factor. It was relatively commoner in vigorous young adults, and he had not yet heard a convincing explanation for it. The passing of a catheter should not be left too long, for if the bladder was overdistended, catheterisation might have to be repeated. Post-operative retention was less common in women than in men. An important pitfall was unrecognised prostatic enlargement; the patient might not have had sufficient cause to seek advice for his prostate, but the rectal interference might be the last straw, and set up a train of prostatic symptoms. Other complications might be more or less coincidental. Thus, he had been asked to see a middle-aged muscular man who had been vomiting for three days after an operation for piles. His abdomen was distended and he had intestinal obstruction; a volvulus, already gangrenous, was discovered, and he died the same day. The speaker thought that the volvulus had been caused by post-operative vomiting. Sometimes fissure in ano developed during convalescence, but, as a rule, he considered the fissure was present before the operation was undertaken; it was overlooked through being tucked away between two piles. This, again, emphasised the need for good light and efficient exposure. The rarity of abscess and fistula after pile operations was a testimony to the care usually exercised in them.

In conclusion, the President pointed out that the patient who exchanged his piles for a stricture was reminded every day of his life what a bad bargain he had made. It was tempting to call strictures in one's own work "traction bands," and he wondered how far these bands were preventable. Occasionally they occurred after operations carried out under the best conditions. Were they due to fibrosis and contraction of the submucous layers, and was there agreement about the relative frequency of stricture in various types of operation? Was it less common in the operation in which the whole pile was ligatured en masse, without transfixion, or cutting except for the V-shaped incision in the skin, or after an attempt had been made to strip up the pile from the rectal wall until a definite pedicle was made, transfixing with a ligature? In the second there was certainly a raw surface left to granulate up, and so one which was exposed to sepsis. No detail should be considered too insignificant to demand attention.

Discussion.

Mr. HASLET BALDWIN said he had seen but few cases of hæmorrhage after operation for piles. He agreed that maintenance of asepsis would prevent many complications. He always swabbed the rectum with an antiseptic before beginning the operation. After operating he gently dilated and examined the mucous membrane to see whether a stricture had formed. He never dilated the sphincter.

Mr. W. B. GABRIEL held that post-operative ulceration was an important complication, because it led to chronic disability and needed prolonged after-treatment; and even so it might never return to normal. Operation should never be done on a septic pile; if ulceration was present it should be treated on expectant lines, with antiseptic compresses, and the patient in bed. A 5 per cent. solution of carbolic acid in oil gave good results in bad piles. For internal piles the Whitehead operation should not be done. He had seen severe complications after the clamp and cautery operation. The ligature operation was the method of choice. During the last year he had used local anæsthesia, which gave full relaxation of the sphincter. Post-anæsthetic vomiting was to be avoided in order to prevent external œdema. Piles should not be stripped up high. Ligation at the level of the anus reduced secondary hæmorrhage. Catgut was superior to silk because it gave smoother and more rapid healing.

Mr. CYRIL NORBURY said that at one time he did the high stripping operation and had a number of strictures. He now ligatured a little above the anal margin, and his results were better. He had had two cases of that serious complication, suppurative pylephlebitis, one of which had proved fatal on the eighth day. Absolute asepsis in the anal region could not be secured and the possibility of suppuration in the liver should be in the surgeon's mind. Another uncomfortable complication was irritation after the operation. Some patients had marked pruritus ani after it, but fortunately this responded as a rule to local measures.

Mr. E. T. C. MILLIGAN spoke of strictures of the anal canal after pile operations, a complication which he contended could be avoided. The site of the stricture ring was the upper third of the anal canal. In a series of 282 operations stricture occurred in 32 (11·3 per cent.); while in another series of 290 there were 27 strictures (9·2 per cent.). When three or four large piles were removed by stripping up, a large bare ulcerating surface was left, and this, encircling the canal, might result in stricture. Ligature at different levels to obviate this complete encircling had been suggested but could not always be satisfactorily carried out. He did not strip the pile off the anal canal, and he left a good area of healthy intact skin

and mucous membrane between the ligatured hæmorrhoids. If a constriction ring did not develop immediately after operation it would not develop at all.

Mr. V. WARREN LOW thought that most of the complications met with in hæmorrhoid operations were due to leaving raw areas. He carried out the operation devised by Mitchell, of Belfast, and never removed more than four separate hæmorrhoids. He had not had stricture in his cases and he had not seen hæmorrhage follow. In retention of urine in these cases he thought there was a large functional element; it was expected, and doctors for that reason generally complained of it in themselves after this operation.

Mr. W. S. PERRIN said his practice was to divide the pecten band, and pain was practically non-existent in the first 24 hours. He objected to dilatation of the sphincter, and he had not had hæmorrhage after the ligature method. He preferred the old-fashioned ligature operation.

Cases were shown and discussed.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF SURGERY.

A Fatal Case of Diverticulitis.

A MEETING of this Section was held on Nov. 29th, Mr. R. ATKINSON STONEY, the President, in the chair.

Sir WILLIAM WHEELER described the clinical course of a fatal case of diverticulitis which perforated into the free peritoneal cavity. The patient, a man aged 44, had previously been healthy. Half an hour after a dose of salts, when his bowels had acted, he developed an excruciating pain in the left iliac fossa. He was seen within an hour, and the signs and symptoms were then exactly similar to a recent perforation of the duodenum or stomach, except that all were in the left iliac fossa. There was no difficulty in diagnosis, notwithstanding the absence of history. No left-sided appendicitis could have developed with such dramatic suddenness. The bowels had acted well. There was no distension, and the picture was one of inflammation and not of obstruction. Within three hours the abdomen was opened to the left of the middle line below the umbilicus. The pelvic colon was found loose (exceptional in diverticulitis) and the perforation was dealt with by leaving the loop of colon outside the abdomen. Subsequent resection by the Mikulicz method was contemplated. The cæcum was drained. The following day ominous black vomiting became almost continuous. Lavage only produced temporary relief. A high jejunostomy was performed under gas-oxygen and local anæsthesia, but here again the loop failed to drain. Enemata were introduced by a catheter through a stab in the extruded colon, but no evacuation resulted. Vomiting continued. The patient was induced to swallow a duodenal tube, and by means of this a total of three pints of orange-coloured material was aspirated in 12 hours. At first the patient's condition improved considerably following aspiration, but later there were signs of starvation from the loss of duodenal contents. A somewhat similar case published by D. P. D. Wilkie was quoted. Sir William Wheeler pointed out that in persistent high obstruction the surgeon was faced with a dilemma. On the one hand the duodenal contents were extremely toxic, on the other loss of these contents for any prolonged period produced a physiological death. He had adopted Wilkie's plan in a modified form. The fluids aspirated from the duodenum were immediately injected through the jejunostomy. Following this procedure, drainage commenced through the cæcal tube. Peptonised milk, panopepton, and other foods also were given through the jejunostomy. On the fifth day the patient announced that he felt at last he was going to recover. This improvement lasted for six hours, but a relapse followed. Regurgitation recurred, and the patient died. Twelve pints of 10 per cent. glucose solution combined with insulin were administered intravenously during the five days. Continuous saline was given by the drop method into each axilla. During the first three days the patient appeared to be in a condition of alkalosis and some tetanic spasm was noticed. Administration of calcium and increased quantities of chlorides together with glucose proved effectual. Towards the end, air-hunger, combined with diacetic acid and acetone in the urine, indicated acidosis. During the six hours in which recovery seemed likely the material drained from the cæcum contained bile. The bile was not mingled with the other contents but came away separately. Sir William Wheeler had noticed in some cases of chronic pancreatitis the bile did not mingle with the characteristic clay-coloured stools. There was evidence in the case described of insufficiency of both liver and pancreas.

Discussion.

The PRESIDENT referred to the fact that the cæcum had been brought out through the main incision; if a separate opening had been made on the opposite side, the cæcum might perhaps have drained itself and prevented the high obstruction.

Mr. A. CHANCE was inclined to think that the vomiting was not mechanical but toxic, and suggested that the whole condition might have been toxic.

Mr. H. STOKES wanted to be clear that there really was a diverticulum. He had come across many cases of perforation of the large intestine without diverticula. It was fatal to put tubes into dilated gut for drainage purposes.

Mr. F. J. HENRY said that free perforating diverticulitis was a great rarity. In the only case in his experience there was no difficulty in closing the perforation and the patient recovered fairly easily.

Reply.

In reply, Sir WILLIAM WHEELER said that the cæcum was loose and it was possible to perform cæcostomy through the primary incision. He believed that the obstruction which followed septic peritonitis was usually mechanical. Loose adhesions between loops were the cause of obstruction. The loop of bowel was removed after death, and the perforation of one of many diverticulæ demonstrated.

Mr. OLIVER CHANCE read a paper on Some Experiences in an English Radium Clinic.

PAN-PACIFIC SURGICAL CONGRESS, HONOLULU.

(FROM OUR AUSTRALIAN CORRESPONDENT.)

REPRESENTATIVES of all the principal races bordering on the Pacific attended the Pan-Pacific Surgical Congress at Honolulu from August 14th to 23rd last.

A Honolulu Hospital.

The 13 delegates from Australia and New Zealand reached Honolulu four days before the Conference, and had a chance of studying the wonderful Queen's Hospital, built by public subscription, and containing 280 beds. It is under the directorship of Dr. Nils Larsen, a Swede of great ability and organising power, and it has reached a high level of efficiency.

Ninety-eight per cent. of the income comes from patients; the city and county pay for indigent persons who have been resident for more than five years, and there are 30 endowed beds for waifs and strays. Ward patients pay 10*s.* a day. Private wards are from £2 a day. The meals are brought to each patient, even in the ward, on a tray with a linen cloth and a vase containing one flower to give a home-like touch. The name of each patient is on a card on the treaty, and these cards are of different colours according to the diet, so that the sister in charge can see at once that no mistake has been made. The lighting of the wards at night is from a diffused dull electric light in the floor, which cannot

be seen by the patient, but is sufficient to guide the sister to the different beds.

There are five resident medical officers in the hospital, and every man in the city who is a member of the medical society is entitled to send in patients under his own care. This, of course, complicates the work, and does not make for the most expert treatment of the patient; but the disadvantage has been countered to a certain extent by the director, who has instituted weekly meetings of all those entitled to send in patients. At these meetings every week any untoward event is brought up for discussion and criticism. The name of the medical man is suppressed, but, of course, is known to most of those present. The criticism is unsparing, and even if the responsible doctor has not attended the meeting he is very soon informed of it by his colleagues in the town. Another feature of this hospital is that director, residents, and nurses are regarded as one unit, having but one object in view. Thus when lunch was given to some of the selected delegates it was attended by all those members of the staff who could be spared, including nurses.

Hospital Standardisation.

An afternoon was devoted to a discussion on hospital standardisation which was illustrated by exhibits, including a model of the new King County Hospital of Seattle, which is considered the most modern hospital supported by charity. Another exhibit showed the standardisation of sponges used at operation. This subject was investigated throughout America, and it was found that the different varieties in use numbered over two hundred. These were standardised and seven varieties only are now recommended. Dressings have been dealt with in the same way.

Prof. C. JEFF MILLER (New Orleans) said that in the 12 years since hospital standardisation began in America it had spread into every branch of hospital work. Its annual survey included 3000 hospitals, of which nearly 2000 were on the approved list.—Dr. M. T. MACEACHERN explained hospital standardisation:—

It is a movement, he said, which has been carried on by the American College of Surgeons during the past 12 years with the object of providing better service to the patient. An annual survey of all hospitals of 26 beds and over is carried out. The rating of each hospital is based on what is known as the minimum requirements, of which the fundamental principles are: a properly organised medical staff; regular conferences for review and analysis of the clinical work; accurate and complete case records; and adequate laboratory and X ray facilities under competent supervision. This movement has done much to reduce the average stay of patients and mortality-rates in hospitals.

Surgery of the Alimentary Tract.

Prof. MILLER emphasised the need for early diagnosis and rapid operation in cases of intestinal obstruction. "This was a condition," he said, "in which the lowest mortality is achieved, not by the conservative surgeons, who operate only on definite diagnoses and for whom, ordinarily and properly, we have only praise, but by that other group of enthusiasts, whose resort to the knife is immediate, and for whom, ordinarily and properly, we have only condemnation. Their craftsmanship may be dubious, their surgical judgment is unquestionably dubious, but in this one contingency at least we should do well to emulate them, for they lose the fewest patients from this deadly disease." He outlined the medical and surgical treatment in detail, and stated "that the mortality rises approximately 1 per cent. with each hour of procrastination, and any mortality over 10 or 12 per cent. can be charged only to delay. The death-rate, which is popularly quoted as 30 or 40 per cent., actually is 55 or 65 per cent., and we are only stultifying ourselves when we refuse to face the true figures."

Prof. J. R. B. BRANCH (Shanghai), in a communication on the surgical treatment of intestinal tuberculosis, said that pictures after a barium meal showed two striking things—hypermotility due to ulceration, and filling defect in the cæcum and ascending colon, which might be due to hypermotility or actual stenosis. Surgery was clearly desirable in some borderline cases, in cases with stenosis, and in those which had resisted thorough medical treatment.

Dr. A. O. LOE (Seattle), speaking on acute perforation of peptic ulcers, pointed out that early diagnosis and operation were imperative. The mortality-rate was directly proportional to the time intervening between perforation and operation. Simple suture was a safe routine. Resection and suture might require secondary operation later, owing to obstructive symptoms or disturbed physiological action. Resection with Finney or Horsley pyloroplasty was the more ideal operation in early cases, relieving symptoms and producing more normal physiological relations between stomach and duodenum. The mortality-rate was low. Resection and gastro-enterostomy was indicated only in cases of large calloused ulcers and immobility of the duodenum.

Dr. HORACE J. WHITACRE (Tacoma, Washington), in a paper on duodenal surgery, said that loss of appetite, nausea and vomiting, dizziness, general malaise, and a great variety of vague abdominal symptoms were duodenal in origin. Duodenal adhesions secondary to cholecystitis, duodenal ulcer, duodenitis, and other abdominal conditions could and did cause these symptoms. "I now," he said, "look upon duodenal mobility and an unhampered duodenum as an objective, which, from the viewpoint of a complete cure, outweighs in importance the removal of the gall-bladder in a case of cholecystitis with adhesions." He described a peritoneal plastic operation which would restore free peristaltic mobility to the duodenum and which would cure the symptoms.

Goitre.

Dr. DAVID C. HALL (Seattle) reported observations on 30,000 students of the University of Washington, and said he had found the incidence of goitre to be high on mountain range slopes and low on plains and Puget Sound islands. Recent years show a marked decrease due to education, iodised salt, and iodine tablets.

Dr. CHARLES L. MIX (Chicago) said that adenomatous goitre could be wiped out by the administration of proper amounts of iodine to all pregnant women; in this respect veterinary surgeons were ahead of physicians. In pure adenoma, the administration of iodine might do harm instead of good. Dr. Mix was emphatic in his belief that any adenoma should be removed surgically as soon as discovered. Goitre of non-toxic type might become toxic at any time, through abnormal innervation brought on by fright or a number of other causes.

In goitrous regions one-third of the girls and one-fifth of the boys showed thyroid enlargement. The reason for the excess in girls was that they must store up enough thyroid secretion to last their offspring for a certain length of time. If they were unable to do this owing to an insufficient supply of iodine in food or water, the thyroid gland would enlarge by way of compensation in an effort to increase its secretion by increasing its capacity.

Dr. J. RUSSELL WELLS (New Zealand) stated that he had known a few instances of goitre in Maoris, but this was in a district where the Maoris had largely adopted the customs of the residents of British origin. He agreed with Dr. Mix that all adenomata should be removed.

Dr. R. E. MCKENCHIE (Vancouver) maintained that an ultramicroscopic organism is the probable cause of goitre, while absence of iodine makes people vulnerable to invasion by the organism.

The Lungs and Bronchi.

In a symposium on bronchoscopy and thoracic surgery, Dr. EMIL HOLMAN (Stanford University, California) read a paper on post-operative intrapulmonary abscesses. "An analytical study of 1908 cases of pulmonary abscess shows," he said, "that 29·6 per cent. followed some operation, and more than half of these followed tonsillectomy. The

available experimental evidence corroborates clinical impressions that intrapulmonary suppuration may be produced both by the intrabronchial and intravascular routes. There is no experimental evidence to support the theory that the lymphatic system is a factor in the production of intrapulmonary suppuration."

Dr. LEO ELOESSER (Stanford University) spoke on chronic bronchial stenosis. Whilst tracheal stenosis and acute bronchial stenosis (foreign bodies and massive collapse) had been closely studied, not enough attention, he thought, had been paid to the chronic condition. The causes were sometimes congenital and sometimes took the form of compression due to tumours, inflammatory processes, or foreign bodies. He uttered a warning against the use of iodides, and spoke of the danger of placing the patient on his sound side in the hope of draining secretions from the affected side.

"Stenosis is important," he concluded, "not only in theory but in practice. There is much to be done for it. There is also reason to suspect that bronchial stenosis is more frequent than has been supposed, and that it has been responsible for more pulmonary damage than has been cast to its account. I am convinced that lipiodol, the bronchoscope, and familiarity with these pictures will make bronchial stenosis a common disease."

Dr. E. D. ROBERTS (Honolulu), in a paper on iodised solutions as aids in X ray diagnosis, discussed the various methods of combining iodine with oleaginous and other subjects, and described some original experiments. He had first tried corn oil as a base for the solution, but now exclusively used "kukui" oil, a Hawaiian product. This oil had proved very satisfactory and was inexpensive.

Diseases of the Eye.

Dr. LLOYD MILLS (Los Angeles) presented a cinema film illustrating the prevention of complications in the surgery of cataract. The modern preparation for the operation, he said, had largely eliminated many of the former difficulties. Vitreous prolapse, which resulted more from the patient's sudden reaction to unexpected pain than from heavy-handed surgery or predisposing ocular disease, had been reduced by adequate mental preparation for operation, perfect anæsthesia, and full suture of the wound. The use of a full conjunctival flap and its complete suture was applicable to any form of cataract extraction, save that with corneal incision. The difference between the final results of intracapsular and extracapsular operations in the hands of equally experienced surgeons who used full closure of the wound by flap and suture should depend solely upon the reaction of the eyes to retain lens substance.

Sir JAMES BARRETT (Melbourne) read a paper on visual standards for mariners and railway officers. In men of the first class, he said, the initial vision should be 6/6 in each eye, with normal eyes and colour vision and an error of refraction not exceeding 1 dioptre, including 0·5 of astigmatism, with a little flexibility as regards the error of refraction. For less responsible positions a larger error of refraction could be permitted if there was no eye disease. The vision of all those concerned in a railway or marine accident should be re-examined before they were allowed to resume duty.

Leprosy.

Dr. FORREST J. PINKERTON (Honolulu), reviewing 700 cases illustrating the surgery of the leprous eye, said that early surgery upon the lid in orbicular paralysis was imperative and should be done before corneal changes have begun. In iritis early medical treatment was essential. Novocain infiltration was the operation of choice for all surgical procedures on the leprous eye.

A demonstration of clinical leprosy was given at Kalihi Receiving Station.

A rural community has been established on a peninsula of the island of Molokai, in which the inhabitants live without restriction and enjoy all the privileges of an ordinary community. They may even marry one similarly afflicted, but children are removed from the settlement immediately after their birth. To this settlement are sent lepers, whose progress towards convalescence is slow or have become a burden to their friends, but before being sent there every individual is legally entitled to remain for six months at the Kalihi Hospital, which acts as the receiving station for the territory. Here they may be examined by three physicians: one selected by the Board of Health, one by the patient, and the third selected by the former two; or they may elect to accept the diagnosis and recommendations of the physicians in attendance at the hospital. Provisions are made for subsequent examinations in cases of doubt. No children under 16 years of age are transferred to the Settlement except at the wish of their parents.

Dr. J. T. WAYSON said that since leprosy was first introduced into Hawaii it had spread rapidly. Fifty years ago there were two known cases to every hundred of the people. Since 1890 the annual number of admissions had continuously though slowly fallen.

Neuro-surgery.

Dr. GEORGE W. SWIFT (Seattle) gave an address on the dural venous sinuses and choked discs. He upheld the view that choked disc was mechanical in origin and caused by a damming of the venous blood, resulting directly or indirectly from pressure upon the cavernous and petrosal sinuses.

Dr. STEELE STEWART (Los Angeles) presented a paper illustrated by cinematograph on a possible explanation for the effects observed following ramisection in cortical rigidity. He suggested that they were due to a segmental vasodilatation of the vessels of the cord, resulting in a lessened irritability of the anterior horn cells.

Dr. E. B. TOWNE (San Francisco) and Dr. MAKOTO SAITO (Japan) read papers on radiographic localisation of cerebral tumours, and the latter showed a film demonstrating the technique of a fascial transplant from the thigh to replace adherent dura, excised in a patient suffering from traumatic epilepsy. For demonstration of the arteries of the brain he had, he said, discarded the sodium bromide recommended by Moniz and used an emulsion of lipiodol. The emulsion was injected through the superior thyroid artery after a temporary clamp had been put on the common carotid and external carotid arteries. The size of the droplets of the emulsion used was larger than a red blood corpuscle, but smaller than a white blood corpuscle. This method had been used in 40 instances without any untoward result.

Prof. W. A. OSBORNE (Melbourne) delivered an address on the surgical applications of recent advances in physiology. Dealing first with anæsthesia, he said that doses of atropine should be on the low side, since the absence of secretion removed a natural protection. Speaking of the so-called nerve patterns he maintained that "tendon transplantation is physiologically a far sounder procedure than any form of nerve implantation or nerve graft." Later in his paper he said: "The alimentary canal has duplicate chemical plant, but has only one tube for transport. Disorders of digestion are disorders of motility. Let the surgeon therefore satisfy himself about the motility, and let the chemistry look after itself."

Cancer.

Opening a symposium on cancer, Dr. EDWIN I. BARTLETT (San Francisco) pointed out that in cancer of the breast the earlier and smaller and more hopeful the lesion the more thoroughly should the operation be performed.

Mr. FREDERICK L. HOFFMANN thought that in general cancer statistics were of little practical value. Most cancer discussions concerned cancer deaths and their relative incidence to a given population, often only roughly estimated. The calculation of specific death-rates by sex and for different age-periods involved a knowledge of data often out of reach. Hence the extreme urgency that it should be understood that most statistical conclusions were only a rough approximation to the truth. The questionaire method of research, while very useful, had endless allacies.—At another meeting Mr. Hoffmann gave a detailed analysis of the cancer mortality records of

Hawaii for the five years ending June, 1928. The general cancer death-rate is low as compared with the United States registration area. The most outstanding feature of the analysis is the extreme rarity of cancer of the breast in Japanese women.

Out of 125 Japanese females dying from cancer during the five years under review, not a single death was attributed to cancer of the breast. For Chinese women, however, the proportion dying from cancer of the breast was 16·7 per cent. This compares with 6·1 per cent. for all races, 6·9 per cent. for Hawaiians, 8·0 per cent. for Caucasians. Unfortunately, for many of the races, the numbers are too small for a generalisation.

Amœbiasis.

Dr. Y. S. LEE (Korea) reviewed 200 cases of amœbic liver abscess treated at the Severance Hospital since 1912. The first 100 were treated by open operation; of the second 100, 27 were treated by operation and 73 by aspiration. Ludlow, in 1926, had reported 160 of these cases.

In discussing the predisposing causes he stated that climate would appear to have a definite rôle in producing liver abscesses in those who were not accustomed to tropical conditions. The incidence in the native army in India was 0·6 per cent., whilst in the European army it was 7·4 per cent. Whilst in India white people would appear to be predisposed to the condition, in Korea the figures showed just the opposite. Race in itself seemed to be an unimportant factor. The disease was much more frequent in males, but 19 females were affected in the 200 cases; of this there was no explanation. The use of alcohol appeared to be an important predisposing cause to liver abscess.

Indigestion was a constant symptom and was sooner or later followed by pain in the right lower chest or hypochondrium, attended in most cases with fever, sweating, and chills. A sign of the utmost importance was deep-seated pain in the region of the abscess elicited by a sudden thrust with the end of the finger. This was important not only for diagnosis, but is a guide for the insertion of the aspirating needle. Enlargement of the liver and bulging of the intercostal spaces occurred during the chronic stage, and when the abscess formed near the surface it may rupture into the abdominal cavity, pleural cavity, lung, abdominal wall, and, more rarely, into one of the adjacent hollow viscera.

In treatment, the early and energetic treatment of amœbic dysentery with emetine and the prohibition of alcoholic drinks was almost specific. In the early or presuppurative stage emetine alone was usually sufficient for a cure; when pus had formed aspiration of the abscess with subcutaneous injections of emetine was the method of choice. Aspiration should, as a rule, be repeated in from five to ten days. Open operation had been abandoned except for cases of mixed infection or sinus formation.

Surgical aspects of the treatment of bubonic plague were dealt with by Dr. WU LIEN TEH (China), and Dr. TEISHIN SEO (Japan) read a report on the results of splenectomy for the splenomegaly due to chronic schistosoma infection, which is endemic in various districts of Japan. He also demonstrated specimens of mycotic splenomegaly.

Medical Education in China.

Dr. F. C. YEN (Shanghai) said that great strides had been made in medicine, public health, and sanitation since the formation of the Nationalist Government in China. Work was unified under the Ministry of Health, and rules are being drafted for licensing medical practitioners. A national midwifery board had set up a standard for the practice of midwifery, and has just opened its first training school. A big modern hospital had been established in Shanghai for treatment, research, and the training of students and nurses; it was to be dedicated to the memory of a medical man, "who unified China and conferred great blessings on her 400,000,000 people—Dr. Sun Yat Sen." In China there were 24 medical colleges; 11 were Chinese, 7 were controlled by missionaries, 2 were under direct foreign control, and the remainder were managed jointly by Chinese and foreigners. The total number of students was 2050, whilst the number of practising physicians is estimated to be 4500. China thus had but one medical school for each 16,000,000 of population, and but one doctor for every 90,000 of population. After praising schools established by missions and by groups of Chinese and foreign citizens, Dr. Yen spoke of the type of medical school in China, which was controlled, conducted, and financed entirely by foreign Governments, as represented by the Medical Department of Hong-Kong University and the Japanese Medical College in South Manchuria.

"While they have all helped in turning out doctors, yet it raises a very serious question as to whether their contributions are for the ultimate good of the Chinese medical profession. What China needs is a united profession, not one divided up into cliques, engaged in the less profitable work of proselytising British, French, German, American or Japanese medicine."

Anæsthetics.

Dr. JOHN S. LUNDY (Rochester, Minn.) read a paper on agents and methods used for the induction of anæsthesia in the Mayo Clinic from 1922 to 1928. Local anæsthesia alone or in combination had been employed, he said, in more than half the operations performed. The use of chloroform had been discontinued and had been supplanted by ether. The custom of giving ether by the semi-drop open method was decreasing, but there was an increase in its use through the anæsthetic machine. Dr. Lundy laid stress on the good results obtained with acetylene at the Mayo clinic. "With acetylene," he said, "it has been possible to produce anæsthesia and relaxation, with quiet breathing, without anoxæmia and without the necessity of adding ether." Besides ethylene, there had been an increase in the use of nitrous oxide, ethyl chloride, and carbon dioxide.—In a paper on anæsthesia for operations in the lower part of the abdomen Dr. Lundy said that the choice of anæsthetic was of less importance for the lower than the upper abdomen, but open ether was probably the method of choice. Nitrous oxide and ethylene, especially with ether, was often frequently indicated. It was with operations in this area that spinal anæsthesia found its greatest usefulness. "Surely," he said, "there is no place in anæsthesia for any method to be used as a routine, and with so great a variety of agents and methods at one's disposal there is no acceptable excuse for fitting the patient to the anæsthetic rather than the anæsthetic to the patient."

In the course of a further paper Dr. Lundy referred to the derivatives of barbituric acid, and especially sodium iso-amyl-ethyl-barbituric acid, generally known as amytal. Apart from its other uses, it appeared to be of great value in sea-sickness.

He reported the use of this drug in 1000 surgical and non-surgical conditions. In 617 surgical cases there was little if any delirium, rarely any nausea, and no difficulty with respiration; in the non-surgical cases amytal was used for such purposes as controlling convulsions—e.g., tetanus, hiccup. It was used with carbon dioxide and oxygen in these cases. Amytal was also of value in the treatment of post-operative psychoses and delirium. Following operation after the use of amytal, sleep lasted from 12 to 72 hours. After discussing the disadvantages, which seem to result largely from large doses, he stated that the barbiturates had many practical uses.

Urogenital Surgery.

Mr. S. HARRY HARRIS (Sydney) reported that he had performed suprapubic prostatectomy with complete closure in 104 out of 112 consecutive prostatectomies, included in which were 15 two-stage operations. Of the 104, two patients died, one of pneumonia and the other 48 days after operation. Of the 112 cases, post-operative suprapubic drainage was necessary in eight. Complete control of hæmorrhage was accomplished by suture; further, obliteration of the prostatic cavity and reformation of the prostatic urethra was performed. He thought that "the comfort of the convalescence from the patient's point of view, and the simplicity of the nursing, are in marked contra-distinction to that usually experienced after the usual method of suprapubic drainage."

Mr. J. JENKINS (Dunedin) read a paper on the diagnosis and treatment of stone in the ureter. He said that after clinical and radiographic examination,

investigation should be done under spinal or caudal anæsthesia.

After cystoscopy with an indirect cystoscope, this is changed to a direct instrument and a wax-tipped catheter passed along the ureter well lubricated with oil. This is passed beyond the stone, and if possible several catheters are then passed. The wax bulb is now withdrawn until it comes into contact with the calculus. With the stone thus gripped, intermittent elastic traction is applied by fixing a rubber band at one end to the catheters and to the leg at the other end. After two to three days the catheters work down with or without the stone; if without, the process is repeated a week or ten days later. If it is impossible to pass a catheter or bougie beyond the stone, several attempts are made, and, if still unsuccessful, operation is performed. If infection is superadded to obstruction, operation should be performed at the earliest possible moment. One tends to operate early, if the stone is very large, is impacted high up in the ureter, or infection of the kidney is present.

Dr. ALEXANDER PEACOCK (Seattle), speaking on the treatment of the neoplasms of the bladder, commented on the growing tendency to regard all neoplasms of the bladder as potentially malignant. Electric coagulation applied through the cystoscope seemed to be the most efficient treatment so far devised.

Fractures.

In a symposium on industrial surgery, Dr. L. L. GOODNOW (Washington) pointed out that fracture of the spine and skull were not always treated satisfactorily. In fractured spine all cases which did not clear up quickly should undergo laminectomy; fixation should be done at the same time by inlay graft. Lumbar puncture was indicated if operation was not done. In fractured skull the quantity of fluid removed by lumbar puncture should not be sufficient to reduce the pressure more than one-half at any one puncture. Compound fracture of the skull, as a rule, caused less temporary and permanent disability than the moderate so-called closed fracture. All depressed fractures should be elevated, and decompression should be performed in chronic œdema of the brain and all severe concussions with elevation of intracranial pressure. In another symposium Dr. L. R. CHANDLER and Dr. J. T. WATKINS (San Francisco) communicated a paper on non-union. This paper was an appreciation of the work of the late John Cowan of San Francisco.

The essentials of Cowan's operation are: to elevate the periosteum for a short distance on either side of the fibrous bond; to remove the fibrous bond; to open up the medullary spaces of the end of the fragments; and to prevent the recurrence of fibrous tissue ingrowth between the fragments. This is done with a portion of rib, split into halves. The thin cortex of rib is rolled up into a band or cut into short segments and inserted under the periosteum, about the ends of the fragments at the fracture line, and the periosteum is closed. The operation has been performed on 47 patients; bony union has occurred in every instance except one.

Dr. EVERETT O. JONES and Dr. H. T. BUCKNER (Seattle) presented a paper on fractures of the pelvis. These fell into three main groups: fractures of the wing of the ilium, of the acetabulum, and of the pelvic ring. The authors of the paper said their practice was to put up fractures involving the acetabulum in a Whitman cast as for fracture of the neck of the femur. Fractures of the pelvic ring were treated in a double plastic spica for three months, except where there was upward displacement of one-half of the pelvis—when skeletal traction was applied to the femur—and in upward displacement with lateral spreading, caused by separation of the symphysis, in which a special method of suspension is used. Non-union of a pelvic bone was almost unknown, but failure of the symphysis to unite was very common, and a disrupted sacro-iliac articulation never became normal again. The paper was based on 40 personal cases, and the records of 312 cases. The mortality-rate (15 per cent.) was not high, but the final results were not "surprisingly good." In their series of cases 41 per cent. were left with some degree of disability ranging from 5 per cent. to total.

The Ear.

Dr. ROBERT PULLEINE (Adelaide), in a communication entitled An Insufficiently Considered Factor in Chronic Progressive Hardness of Hearing, said that snoring and blowing the nose, continued over a long period, resulted in gradual impairment of hearing. The primary cause was hereditary spur of the nasal septum, against which treatment should be directed. In the past this form of deafness had shared the bad prognosis of familial deafness, and has often been wrongly treated by routine inflation—the form of treatment most detrimental to it.

Dr. FRANK A. PLUM (Honolulu), summarising a paper on meningitis of otitic origin, said that delay was often caused by a diagnosis of meningism. Diagnosis must not wait upon appearance of a turbid fluid containing organisms, for the only chance of success depended on operation, which entailed removal of the focus of infection and drainage of the subarachnoid according to the route of infection. A careful bacteriological examination should be made of every mastoid operated on, and in pneumococcal and streptococcal infection the immediate use of serum was desirable. In diffuse cases, drainage, intracranial lavage, cerebral, cisternal and spinal, and Kolmer's intra-arterial medications are indicated.

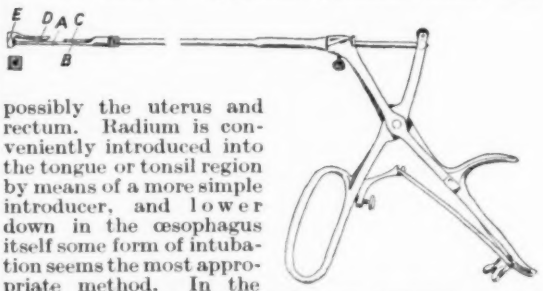
Dr. A. T. WANAMAKER (Seattle), in the course of an address on lateral sinus thrombosis, said that the Queckenstedt test was useful in diagnosing a mural clot, an obliterating clot, and narrow or absent lateral sinus on the non-infected side. A portion of the lateral sinus plate should be removed in all cases of mastoiditis with septic temperature. Experimental work on dogs had shown the value of not severing the jugular vein.

At the close of the Congress it was decided to hold a Pan-Pacific Surgical Conference at Honolulu every three years, the next to meet in 1932. Dr. George W. Swift was elected first President, Dr. Nils P. Larsen Vice-President, and Dr. F. J. Pinkerton Secretary.

New Inventions.

RADIUM-NEEDLE INTRODUCER.

I HAVE had constructed a radium-needle introducer for use in the less accessible parts of the pharynx (epiglottis, pyriform fossæ) and possibly the uterus and rectum. Radium is conveniently introduced into the tongue or tonsil region by means of a more simple introducer, and lower down in the œsophagus itself some form of intubation seems the most appropriate method. In the middle region of the lower pharynx, however, I have felt the need of an instrument which can be used through a direct laryngoscope, and the one shown in the illustration has proved slender enough for this purpose. Moreover, it affords a very accurate aim. The silk-threaded needle lies in the groove A in the shaft B, held down by a spring D and is propelled by a movable bar C through a countersunk opening in the square-ended, rough-surfaced foot-piece E which is held firmly on to the surface of the growth, all movements being slow and gentle to avoid damage to the silk thread.



The instrument is made by Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, London, W.

DOUGLAS A. CROW, M.B., Ch.B. Edin.

A SYRINGE AND NEEDLE FOR THE INJECTION OF HÆMORRHOIDS.

HAVING adopted the treatment of internal hæmorrhoids by the high submucous injection of 5 per cent. phenol in vegetable oil, as described by Albright and Blanchard, I have had made a modification of the original Graeme Anderson outfit as shown in the

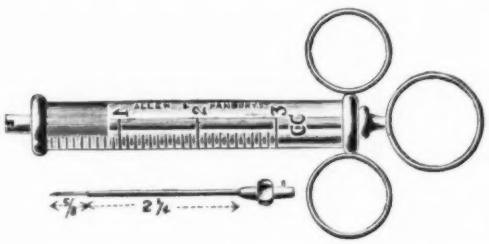


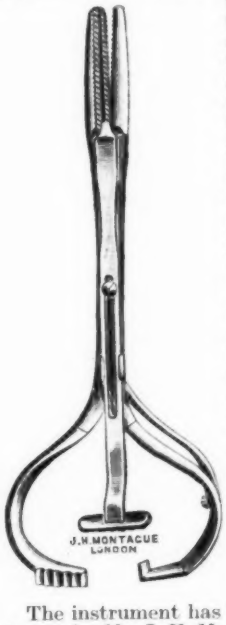
illustration. The syringe holds 3 c.cm and is graduated in tenths of a c.cm. The valuable bayonet fitting for the needle is retained which permits immovable attachment of the needle to the syringe. The base of the needle is bored out as wide as possible and a No. 20 standard wire gauge stainless steel needle is now fitted. The total length of the needle has been increased to 3¾ in. The syringe and two needles are fitted into a small case as before. I find that the oily solution, even when cold, flows very readily through this needle with quite light pressure, and the high injection of the solution in adequate doses in rendered easy.

The instrument has been made for me by Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, London, W.

W. B. GABRIEL, M.S., M.B. Lond., F.R.C.S. Eng.

A PROSTATECTOMY INCISING CLAMP.

As is well known, after the actual enucleation of a prostate by Freyer's method a shelf often remains, which if not divided, may lead to partial or even complete occlusion of the vesical outlet. Cutting it with scissors may result in further hæmorrhage, while tearing it with the finger is not only crude but in some cases impossible. I have, therefore, designed the instrument shown in the accompanying illustration. It is about eight inches long, has an outer or handle portion with a self-releasing rack, and an inner portion consisting of a clamp and blade. The inner end for clamping and cutting the shelf has flat serrated jaws, each of which is deeply grooved down its centre. When the clamp has been applied the blade is pushed down the grooves to the end of the instrument. In this way the partition is not only divided but thoroughly crushed on each side of the incision, the process taking only a few seconds, and very much minimising the possibility of dangerous bleeding.



The instrument has been neatly and skilfully made for me by Mr. J. H. Montague, of New Bond-street, W.

W. K. IRWIN.

Reviews and Notices of Books.

INTERNAL SECRETIONS OF THE OVARY.

By A. S. PARKES, M.A. Cantab., Ph.D. Manch., D.Sc. Lond., Beit Memorial Research Fellow, Department of Physiology and Biochemistry, University College, London. London: Longmans, Green and Co. 1929. Pp. 241. 21s.

TEN years ago a book written upon the internal secretions of the ovary might have contained as much theoretical discussion, but it could only have included a fraction of the experimental facts which form the basis of Dr. Parkes's monograph. The rapid growth of the subject, to some of whose developments we recently called attention,[1] has not made his task any simpler, but has added greatly to his difficulties. It is easier to review the value of past discoveries than to assess the importance of contemporary work; there is always the possibility that some point at present apparently insignificant may suddenly become the centre of the picture. This possibility has recently been illustrated in the inter-relationship between the anterior pituitary and the ovary. As long ago as 1901 A. Fröhlich pointed out the connexion between pituitary disorders and aberration of sexual function, but it was not until 20 years later that the work of H. M. Evans provided a sound experimental foundation upon which B. Zondek and S. Aschheim in Germany, and P. E. Smith and E. T. Engle in America, have built up quite an imposing structure during the last three years. Their labours show that the anterior pituitary hormone, exercising influence on the gonads of both male and female, plays a much more important rôle than was previously supposed. This is true of its effect on the ovaries with which aspect of its activities the present volume is alone concerned, quite apart from the great part which the anterior lobe has been shown to play in promoting general bodily growth.

Dr. Parkes has well fulfilled his duties as a contemporary historian, and this in itself is an achievement. But he has done more than this. The value of his book is principally due to the fact that its author is himself in the vanguard of the small army of workers who are actively engaged in research upon these problems, and has thus been able to exercise a wise discrimination in the selection of his subject matter. There are few statements in this book that cannot be proved by direct experiments. Theoretical considerations receive adequate consideration, but Dr. Parkes has them well under control. Essential arguments are stated briefly but clearly, and at each stage the experimental evidence in their support is critically surveyed.

The book starts with a brief account of the morphology of the glands, the reader being referred for a detailed description to special anatomical and histological treatises. A fairly exhaustive survey follows of sexual periodicity and types of œstral cycle in those species of the female mammal in which it has been sufficiently well investigated. This section is well illustrated, and will be found valuable, particularly by those who are themselves carrying out experimental work in this subject. The ovary as an organ of internal secretion is then considered generally, in a section which forms an introduction to the more detailed one dealing with the œstrus-producing hormone. This latter occupies some fifty pages of the book and is the best account of this subject available at the present time. No important contribution seems to have been omitted and all are clearly presented as part of a coherent whole—an entirely successful conclusion to what must have been an exceedingly intricate piece of work.

The final sections of the book deal first with the anterior pituitary body and then with the corpus luteum, considered in their relation to the ovary and

[1] THE LANCET, Nov. 23rd, p. 1109.

its function. Both these sections are well done, and the literature here, as elsewhere, is complete up to the end of last year. The final chapter on parturition will be of very general interest. For the selection of the bibliography of some 650 references we have nothing but praise, but this most valuable collection would have been made even more useful if the numbers of the page as well as the year and volume of the various journals had been included. The book is admirably produced and is illustrated by more than fifty excellently chosen photographs.

SURGERY.

Beiträge zur praktischen Chirurgie. By Dr. ALBERT KRECKE. Munich: J. F. Lehmanns. 1929. Pp. 1094. M.12.

THESE reports from Dr. Krecke's private surgical clinic for the years 1923 to 1926 inclusive are well worth reading. The 18 sections deal with almost every branch of general surgery, and many of them make very interesting reading. The author makes no startling new suggestions but he describes clearly his methods of dealing with everyday surgical problems. He reviews critically the results of different treatments and his deductions seem to be based upon sound logic. A valuable feature is an analysis of his failures, which are faithfully described without excuse or extenuation. The reader may not agree with all the author's recommendations and ideas on different surgical problems, but will inevitably ponder these views and consider whether his own need revision. Much that is here written is mere commonplace routine surgery; yet the records are worth the attention of any surgeon, for there are sure to be interspersed here and there interesting clinical facts of which he is unaware.

MOVABLE KIDNEY.

Second edition. By WILLIAM BILLINGTON, M.S., Ch.M., F.R.C.S., Senior Surgeon, Queen's Hospital, Birmingham; Professor of Surgery, University of Birmingham. London: Cassell and Co., Ltd. Pp. 177. 12*s.* 6*d.*

IT is 19 years since the publication of the first edition of this monograph. When it appeared the subject of movable kidney occupied much attention both in this country and abroad, but since then nearly every surgical observer has become convinced that nephropexy is an operation seldom required. Perhaps the pendulum has swung too far in the direction of abstention. Mr. Billington obviously thinks so, for he says "movable kidney may be responsible for seriously lowered efficiency of mind and body and for widespread and persistent functional disturbance." This is a conclusion reached after an experience of operations upon upwards of 1500 patients. The reader may reasonably inquire what increase of surgical knowledge has accrued from this unusual experience of a single operation. He must judge by reading this book. It contains some stimulating suggestions, as when the author attributes the symptoms of movable kidney to imbalance of the sympathetic and parasympathetic systems. "Chronic recurrent over-stimulation of the nervous mechanism whether from constant tugging as in movable kidney, or chemical as in retained products of excretion, produces permanent changes in the nerves and ganglia." Such an explicit statement seems to require some supporting evidence which is not here offered. The author does, however, say definitely that the urine in movable kidney often contains albumin, which disappears after the fixation of the kidneys. A valuable observation is that a large proportion of movable kidneys show some structural change. In the diagnosis of this condition it appears to be a little difficult from objective signs to say when a degree of mobility is abnormal. A pyelographic examination is surely of more importance than Prof. Billington is willing to concede. It does at least show when dilatation is occurring, with consequent changes in the renal substance. Such conditions are really signs of hydronephrosis and not only of simple renal mobility. "A growth of the colon may be easily mistaken for a movable kidney and vice versa," says Prof. Billington; but the symptoms and signs are so different that this must surely be an unusual mistake.

In order to get a true estimate of results the author asked an independent physician to investigate 163 of his 1500 cases. There was "complete success" or "success" in 43 per cent. and improvement in 25 per cent. of this group. The evidence offered is invalidated by the fact that "by far the greater number which constituted groups 1 and 2" (that is "complete success" and "success") "have had appendicectomy as well as kidney fixation." The author does well to emphasise the fact that the operation has no moral value. Indeed he regards it as a further strain upon a mind and body already over-stimulated and exhausted. The last word on this surgical problem has not yet been said.

ON NEPHRITIS.

By A. CECIL ALPORT, M.D. Edin., M.R.C.P. Lond., Assistant to the Director of the Clinical Medical Unit, St. Mary's Hospital, London. With an introduction by Prof. FREDERICK LANGMEAD, M.D., F.R.C.P., Director of the Unit. London: William Heinemann (Medical Books), Ltd. 1929. Pp. 175. 7*s.* 6*d.*

THE student will be somewhat disappointed in this book, after reading the excellent introduction by Prof. Langmead, for Dr. Alport in surveying the inflammation and degeneration of the kidney does not succeed in elucidating the confusion which surrounds their classification. From Chapter VI., dealing with the Degenerative Group or Nephrosis, no very clear conception of what the term "nephrosis" connotes is obtained, and the author makes no mention of the absence of all cardiovascular change in this condition. This is a grave omission, and in the chapter dealing with Subacute Parenchymatous Nephritis Dr. Alport fails to point out the essential distinction between cases of albuminuria and œdema with cardiovascular change and those in which such change is absent. The failure would be more understandable if these chapters were not enlarged by the inclusion of copious references to recent literature. In the chapter dealing with Chronic Interstitial Nephritis it is hard to reconcile the inclusion of many recent references with the omission of all reference to the classical work of Gull and Sutton, who many years ago laid down accurately the pathology of the majority of cases included in this book. The chapters devoted to biochemistry are not up to a standard which would be favourably received by expert laboratory workers; for example, the description of methods for the estimation of the nitrogenous constituents of the blood contain no reference to the classical methods of Folin and Wu. We are well aware of the difficulties surrounding the subject, but hold that the exposition of modern ideas of classification is only profitable if the essential differences between the old and the new conceptions are made clear.

Dr. Alport's survey contains much interesting material, but he has not given a clear picture of nephritis as distinct from nephrosis.

DIETETICS.

Chemistry of Food and Nutrition. Third edition. By HENRY C. SHERMAN, Ph.D., Sc.D. Mitchell Professor of Chemistry, Columbia University. London: Macmillan and Co., Ltd. Pp. xii. + 636. 12*s.* 6*d.*

The progress of the science of nutrition in recent years has necessitated the frequent revision of text-books. Prof. Sherman's book has been almost completely rewritten and now includes several new chapters as well as considerable additions to the valuable lists of references which are appended to

each chapter. This work is not a treatise dealing merely with the chemical composition of food and the mode of utilisation of foodstuffs in the animal body, but is a clear and connected account of the physiological principles concerned in the normal nutrition of mankind. It is intended primarily for those who are making a special study of nutrition, although it can be recommended also for those who are interested in a more general way in modern conceptions of the relation between diet and health. As an illustration of the difficulty of keeping a text-book up to date it may be noted that no mention is made of ergosterol as the precursor of the antirachitic vitamin, and the water-soluble vitamin B complex is still dealt with as a single entity.

A Laboratory Handbook for Dietetics. Third edition. By MARY SWARTZ ROSE, Ph.D., Professor of Nutrition, Teachers College, Columbia University. Same publishers. 1929. Pp. 269. 12*s.* 6*d.*

A handbook written by Prof. Mary Swartz Rose consists essentially of tables indicating the average chemical constitution of common foods in respect of well recognized constituents such as protein, fat, carbohydrate, calcium, phosphorus, and iron. The tables are preceded by instructions on how to use them to devise diets containing the required amounts of any of these constituents, together with the requisite energy values. The tables are designed so that all unnecessary calculations can be avoided, hence the amounts of the various food constituents are given not merely as a percentage of the raw or cooked food, but as the actual amount present in one gramme, one ounce, one pound, and one portion furnishing 100 calories of energy. The book has already proved of value to those engaged in constructing diets either for individual hospital patients or for healthy inmates of institutions. It should not be forgotten, in using a reference book of this kind, that even the most elaborate calculations of the dietetic needs of an individual are liable to many sources of error. In the first place the interpretation of the results of chemical analyses is not always a simple matter. For example, recent work done in this country on the carbohydrate content of fruits and vegetables makes it clear that considerably larger amounts of such foods may often be allowed to diabetic patients than would be calculated from the food analysis tables included here. Again, it is assumed in certain of the tables that we have a working knowledge of man's daily average requirements of mineral salts such as calcium, iron, and phosphorus. But on the contrary the body's needs for these substances vary enormously with other factors in the diet or environment, and it is clear that the giving of an accurately calculated quantity of each mineral element may not itself necessarily secure the desired physiological result. These criticisms do not affect the main usefulness of the book, which will enable diets of any particular character to be designed with the minimum amount of labour.

CHEMISTRY AND BACTERIOLOGY OF PUBLIC HEALTH.

By C. L. DUNN, C.I.E., D.P.H. Lond., Director of Public Health, United Provinces of Agra and Oudh; and D. D. PANDYA, D.P.H. Camb., Professor of State Medicine, University of Lucknow. Calcutta: Butterworth and Co. (India), Ltd. 1929. Pp. 412. 12*s.* 6*d.*

THIS is a publication primarily intended for students in India who are preparing for the Part I. Course of the Diploma in Public Health, and is a companion volume to an earlier work by the same authors entitled "Indian Hygiene and Public Health." Its scope is a wide one, embracing public health chemistry, bacteriology, and parasitology, and in the small compass of some 400 pages the student will find that most of the essential subject matter has been dealt with.

In the chemical section the practical tests are well chosen. A valuable section is that devoted to Indian milk products and substitutes. There is only a brief reference to British regulations for preservatives in foods, or to methods of estimation, and no mention is made of Royal Commission Standards for Sewage Effluents, or of the theory of action of natural waters upon lead. The small quantities recommended for some tests for water and the high dilutions for its bacteriological examination are no doubt connected with the low degree of purity commonly found in Indian water-supplies. Details of technique are not always correct, and this applies both to chemical and bacteriological sections. For example, phenolphthalein is recommended in the standardisation of sulphuric acid with sodium carbonate, and, again, methyl orange for acidity of waters, ignoring carbonic acid. In Winkler's method for dissolved oxygen a serious error would be introduced by the exposure in pouring before acidification; and it is stated that all vegetable oils have a clarifying temperature (Valenta test) above 80° C., and that the silver nitrate precipitate with CO_2 is insoluble in nitric acid.

In the bacteriological section, also, there are several misleading statements. For instance, the spore *B. anthracis* is contrasted with that of *B. tetani*, and only the former is termed an endospore. Such misstatements as those made on p. 249, giving the temperature range for cultures of *B. typhosus* as 40° C. to 46° C., and on p. 261, where for preventive inoculation a dose of "500 to 1000 units of *toxin* is advised," require correction. The discussion of agglutination in diagnosis is inadequate; such important points as the inhibition zone, variation in the agglutinability of suspensions, and delay in the appearance of agglutinins are not mentioned. In the description of typhoid agglutinations the series of diagnostic titres given show that the authors do not appreciate Dreyer's method, although they give it in detail. References to food poisoning and other pathogenic organisms in food, and to methods of isolation, are too brief. Four chapters are devoted to spirochæta, protozoa, animal parasites and hosts, and these contain much useful information, with classification of these organisms, and a detailed study of mosquitoes. The work suffers from the lack of illustrations which are really necessary for the study of all branches of hygiene.

It will be clear that the work can only be recommended as a text-book, where it is supplemented by practical laboratory instruction under capable teachers, so that defects in the descriptions and in the technique prescribed may be corrected verbally.

TUBERCULOSIS.

Laboratory Diagnosis and Experimental Methods in Tuberculosis. By HENRY STUART WILLIS, The Johns Hopkins University and Hospital. London: Baillière, Tindall and Cox. Pp. 330. 16*s.*

THIS is primarily a book on the laboratory diagnosis of tuberculosis, but since it is written from a very wide angle the reader is given a good understanding of the rationale of the methods adopted. Furthermore, Dr Willis has been generous in his interpretation of the term laboratory diagnosis, so that much information is included, notably in Part 3, on tuberculin, which is not supplied in ordinary laboratory text-books. The book is divided into five sections. The first gives a general description of the various secretions and excretions which must be examined in the study of tuberculosis. The second deals with bacteriological diagnosis and includes the well-known staining reactions for the tubercle bacillus, concentration methods, animal inoculation, culture media, and so forth. It also contains two chapters worthy of special comment. One forms a useful summary of the three main types of tubercle bacilli with their characteristics and includes a suggestive section on the probable basis of acid fastness; the other is concerned with the non-pathogenic acid-fast bacteria, which are too often tactfully ignored in laboratory

manuals. The third part of the book is devoted to tuberculin, its preparation and its diagnostic application to tuberculosis. A welcome chapter describes the standardisation of tuberculin. The fourth part is devoted to the serological diagnosis of tuberculosis, and here a full description is given of the tuberculo-complement-fixation test. The other serological tests are described very briefly, rather less than four pages being devoted to them all, including the sedimentation-rate test. The reason that the author has not considered it worth while to give more space to their consideration is clear from his comment that, although certain of these tests are of value in prognosis, none is dependable for diagnosis. Perhaps nothing more damning could be said about them. The fifth part deals with histological technique; the whole process is traced from the technique of handling and fixing tissues to the various staining methods, and the types of stains suitable for different tissues are described. This part of the book also includes a careful account of the methods of animal inoculation for tuberculosis, together with a description of experimental tuberculosis as induced in various animals.

Numerous diagrams and illustrations of laboratory apparatus add to the value of this work, which supplies an equipment list for a tuberculosis laboratory compiled from the inventory of the laboratory of the Kenneth Dows Tuberculosis Research Fund. An adequate bibliography is appended.

THE ESSENTIALS OF HISTOLOGY.

Twelfth edition. By Sir EDWARD SHARPEY SCHAFER, F.R.S., Professor of Physiology at the University of Edinburgh. With the coöperation of H. M. CARLETON, Ph.D., Lecturer in Histology in the University of Oxford. London: Longmans, Green and Co. 1929. Pp. 628. 15*s*.

THIS most familiar of medical school text-books has again been exhaustively revised and brought up to date. Practically every section has received detailed attention in the process. The section on blood has been recast and much extended, and the appendix on histological methods thoroughly modernised. Many excellent new illustrations have been added, while few of the old ones have been discarded, so that the book is even more liberally illustrated than ever. Indeed, this liberality is carried almost to a danger-point, in that the authors have permitted the retention of some of the old figures which are hardly up to modern standards of photomicrography, and fall notably below the general high standard of the book as a whole.

One point arises out of the teaching matter, and this touches the question of the identity of the "proximal" renal tubule. Schafer remains a steadfast supporter of the claims of the second convoluted tubule to the title, while a large body of teachers now favour the first convoluted tubule. This is one of the questions which medicine has so far failed to solve.

DENTAL ANATOMY.

A Graphic Presentation of Tooth Forms with an Original Technique for their Reproduction. By M. DIAMOND, D.D.S. Associate Professor of Dentistry, Columbia University Dental School. New York: Macmillan Company. 1929. Pp. 300. 21*s*.

IN America the investigation of tooth forms has been developed in considerable detail, and the training of the student in many dental schools comprises the reproduction of the teeth in wax or other material. This book provides a detailed study of the naked-eye anatomy of the teeth which corresponds to the descriptions in text-books on osteology of every mark on the skeletal bones. There is no doubt that the macroscopic anatomy of the teeth is important, and that the dentist should be thoroughly familiar with the normal structure of the organs which he has to repair or closely to imitate. A book devoted to the subject can scarcely make light reading, and must be used as a laboratory manual rather than a text-book for systematic study. If it is used in conjunction with laboratory exercises in the carving of tooth forms it should prove useful. Presumably it was designed for this purpose, since considerable space is allotted to precise instructions for carving teeth out of blocks of wax. In view of the detailed descriptions of every cusp and fissure on each tooth, it is surprising that the author does not deal fully with the deciduous teeth other than the first deciduous molar. The idea that the deciduous teeth are only a replica in miniature of the permanent ones is widespread, but in many points their anatomy differs, and the five pages devoted to the deciduous dentition are inadequate. The value of conservative treatment of the deciduous tooth is now firmly established, and a detailed knowledge of their anatomy is therefore necessary. We trust that this defect in a useful book will be remedied in future editions.

INFANT WELFARE.

The Infant and Young Child. Second edition. By JOHN LOVETT MORSE, A.M., M.D., EDWIN T. WYMAN, M.D., and LEWIS WEBB HILL, M.D. London and Philadelphia: W. B. Saunders Company, 1929. Pp. 229. 9*s*.

THE intelligent public now demands authoritative and up-to-date information about its health and more especially about the health of its children. This book, by three well-known members of the staff of Harvard Medical School, should be popular, for it is well written, up to date, and thoroughly sound. In this new edition the sections on rickets and ultra-violet light have especially been revised and rewritten because in the authors' opinion there exists a great deal of misinformation about these subjects. New sections have been included on whole milk modifications, green vegetables, poor appetite, and sunshine. In many details the book is excellent and the authors are to be congratulated on their courage in including a small but wise section on the religious education of children.

OUTLINES OF ZOOLOGY.

Eighth edition. By J. ARTHUR THOMSON, M.A., M.D., Regius Professor of Natural History in the University of Aberdeen. London: Humphrey Milford, Oxford University Press. 1929. Pp. 972. 21*s*.

THIS excellent manual for students of zoology has now reached its eighth edition. Numerous original figures have been added, more account has been taken of the physiological aspect of the subject, and more space has been devoted to the structure and development of certain types, such as the Mud-fishes. As a manual for the zoology lecture-room, museum, and laboratory this book has a deservedly high reputation.

The medical and veterinary student will find the chapter on physiology valuable as a preparatory study for his future work. The chapters on morphology and embryology are presented in a readable style. Throughout the book the author links up general with medical zoology. He gives clear accounts of the malaria parasites, the coccidia, trypanosomes, and disease vectors. The details of the process of rumination (page 581) might have been given a little more precisely. We are told (page 220) that "the young fluke makes its way up the bile-duct and its tributaries" to the liver, whereas in fact it burrows its way through the bowel wall and penetrates Glisson's capsule to reach the liver parenchyma. It is this fact which makes the disease so disastrous.

In some places the nomenclature used is not up to date; for example, *Distomum hepaticum* is now generally called *Fasciola hepatica*, and *Eustrongylus* becomes *Dioctophyme*. The volume is well bound, clearly printed, and profusely illustrated.

THE LANCET.

LONDON: SATURDAY, DECEMBER 28, 1929.

AIR-BORNE INFECTION IN PUERPERAL SEPSIS.

In the early days of the antiseptic theories air-borne infection as a factor in the causation of wound infections was given a prominent place; however, it gradually receded into the background and for a time was discarded, though not as whole-heartedly as the carbolic spray designed to counteract its dangers. The possibility that pathogenic organisms might reach the wound surfaces from the air was not entirely banished from the minds of surgeons, and thus, after a long interval, the face-mask was introduced and generally adopted at operations in order to lessen the risk of spray infections from the mouth and respiratory passages of the persons surrounding the patient. The adoption of a mask during the dressing of wounds and attendance on maternity cases has never become general, but in a recent paper on Air-borne Infection in Puerperal Sepsis[1] Dr. RICHARD ARMSTRONG brings us back to the original Listerian position, and, since the evidence produced is convincing, a wider use of the mask by accoucheurs and nurses should be encouraged. Dr. ARMSTRONG'S paper gives clinical data and a scientific basis for air-borne wound infections, and describes three epidemics of puerperal sepsis in two of which full bacteriological examinations were made of patients and their attendants. One of these epidemics took place some years before the other two, and no bacteriological investigations were made, but there was strong evidence that the resident medical officer was a carrier of *Streptococcus pyogenes*. The hospital records showed not only a higher incidence of morbidity during his term of office than in those of his predecessor and successor, but also a lull in the epidemic during his absence on holiday. He had a hæmatoma which suppurated, although the overlying tissues were intact, and, after his hospital appointment was over, developed erysipelas after a facial injury—both strong indications that he was a carrier. Besides these three outbreaks of puerperal infection, a smaller one of erysipelas in a surgical ward was studied by Dr. ARMSTRONG. Here the epidemic was traced to staff nurses responsible for the dressing of wounds, who were found to have streptococcal throat infections.

Dr. ARMSTRONG quotes other spray infections such as the one in the Aberdeen Maternity Hospital described in the ten-year maternal mortality investigation made by Dr. PARLANE KINLOCH; and the epidemic of puerperal fever in the Sloane Hospital, New York, recorded by WATSON and others, both of which support his thesis. From consideration of these, from observation of the origin and spread of other infections, and from animal experiments, he draws the conclusion that the rate of spread in air-borne sepsis is by geometric progression; each carrier infects several persons, and each of these a corresponding number, so that once infection is introduced into a maternity ward, all in it, mothers and attendants alike, become liable to harbour the organism though the maternal placental site is the most susceptible. On admission into an area in which the density of infection is already high, each batch of later and susceptible entrants meets also the increased bacterial virulence that is likely to follow the passage of infection from case to case, and hence the disease tends to assume a more serious form. There appears to be a period of three to five days between infection and the appearance of symptoms, and this incubation period is taken to represent the passage upwards from vulva to uterine cavity, probably by the suction of diaphragmatic respiratory movements. Since attendants and patients may both be infected by carriers and yet show no clinical signs of illness, prevention and detection of an air-borne epidemic in its earliest stages may not be easy, but Dr. ARMSTRONG has established a case for special precautions in maternity hospitals and wards. Prevention by the investigation and exclusion of all with sore-throats or other suggestive symptoms, by the wearing of face-masks, and by the early detection and isolation of both patients and attendants in order to lessen spread and the effects of heightened virulence, are clearly necessary precautions, and point to the need of a pathologist with adequate laboratory facilities attached to all institutions which provide maternity beds.

Precautions against air-borne infections must not, however, be allowed to dominate the situation, for, by themselves, they will not succeed in effecting a substantial reduction in the incidence of puerperal sepsis. Dr. ARMSTRONG draws attention to the greater mortality risk in streptococcal infections arising from operative interference and trauma, and quotes the result of a study of 2000 cases delivered in the extern maternity district of St. Bartholomew's Hospital where the morbidity-rate amongst the forceps deliveries was found to be increased tenfold. The introduction of infection during parturition is still the most important factor in the production of sepsis, and the avoidance of operative interference and trauma is the measure that will diminish the mortality from puerperal fever.

[1] St. Bartholomew's Hospital Reports, vol. lxii., p. 169.

GOOD FAITH AND REASONABLE CARE.

THE Court of Appeal has given an important decision in an action brought against two medical practitioners by a patient whom they had certified under the Lunacy Act. Not only is the decision significant in view of the attempt in Clause 16 of the Mental Treatment Bill to strengthen the protection afforded to the medical profession by Section 330 of the Act of 1890; it is also valuable as evidence of a welcome tendency on the part of His Majesty's judges to interpret the existing law in such a manner as not to deprive the doctor of a useful first line of defence. As the profession well knows, Section 330 declares that a doctor who takes any step in the certification of a lunatic is not to be liable to any civil or criminal proceedings if he has "acted in good faith and with reasonable care." The Section goes on to enact that proceedings may be stayed by the High Court or a Judge thereof if the Court or Judge is "satisfied that there is no reasonable ground for alleging want of good faith or reasonable care." It has never been an easy matter to obtain the aid of the Court under this latter provision. Judges are conscious that they must protect the liberty of the subject and must not lightly intervene between a plaintiff and a jury. The Court of Appeal's recent intervention is the more notable because of the terms used by Lord Justice SCRUTTON in expressing it.

Mrs. JANE EASTON, of Lancaster-gate, brought an action against Dr. WILLIAM ALEXANDER POTTS, of Edgbaston, and Dr. A. V. JOHNSON, of Aldridge, claiming damages for alleged negligence on their part in certifying her in 1926. The defendant doctors applied to have the action stayed on the ground that they had acted in good faith and with reasonable care. The Master, before whom the application first came in Chambers, was satisfied of their good faith but did not feel able to say that there was no evidence of a failure to use reasonable care. Mr. Justice FINLAY agreed with the Master. The Court of Appeal has reversed this view and has ruled that the defendants acted with reasonable care and that there was no evidence on which a jury could reasonably find to the contrary. Mrs. EASTON, at the material date, was on a visit to Staffordshire. The friend with whom she was staying took a serious view of her condition and sent for her sister. The sister agreeing, a doctor was called in. One of the first two doctors refused to certify; next day Dr. POTTS and Dr. JOHNSON certified Mrs. EASTON and she was sent to an institution for treatment. Evidence of her mental state can be gathered from the Lord Justice's judgment. She was, it seems, between 48½ and 50 years old. She had suffered from malaria and she admitted she was in a very depressed condition. A belief in hypnotism, telepathy or thought transference is, as the Court observed, no proof of insanity. This patient, however, seems to have had the delusion that people could, by hypnotic influence, have carnal intercourse without touching each other, and that a doctor whom she saw for the first time had in this spiritual fashion criminally assaulted her in London some years earlier. If a woman thought this, said Lord Justice SCRUTTON, no reasonable jury ought to find that she was not reasonably certified. He was also impressed by her belief that everybody had a sort of aura of smell; she had apparently told the doctor that she smelt him through the door; her letters and postcards, too, though the certifying doctors had not seen them at the time, would have been significant evidence to put before a jury.

Protection offered by Section 330 of the Lunacy Act has thus for once proved not less substantial than the medical profession originally believed it to be. There should, however, be no relaxation of the endeavours to obtain a further strengthening of it in the Mental Treatment Bill. The proposed new Clause seeks this object by throwing upon the plaintiff the burden of proving that the certifying doctor acted in bad faith or without reasonable care. Although English law has always insisted that this burden must be discharged by the plaintiff as a general principle, Section 330 of the Lunacy Act is so drafted as to suggest that the defendant doctor cannot avail himself of the statutory protection unless he positively proves his own good faith and reasonable care. The proposed amendment falls a long way short of the security to which the medical profession is entitled, but, for what it is worth it is a welcome instalment. Lord Justice SCRUTTON emphasised the importance of protecting those who, at the invitation of Parliament, fulfil a duty in the interests of the community as well as of the patient. "If any doctor certifying is to be exposed to the cost and danger arising after the event of judgment (by people who did not see the patient at the time) that the patient at that time was not of unsound mind, the only effect and the natural effect would be that no doctor would certify, and that the community, which is to be protected as well as the individual, would be exposed to the risk of having persons of unsound mind wandering about without adequate control to the danger of themselves and possibly to the danger of the community. We have had a series of cases in recent years showing the risks to which doctors are exposed by actions alleging that they have certified improperly either dishonestly or without due care. It is common knowledge that the result of these cases has been that many doctors will not certify at all. They would not run the risk of undertaking the duty Parliament seeks to put upon them." Other judges have used similar language, and Parliament should take note of the warning.

It is, of course, a difficult matter for one judge to say that there is no possible case for a jury when another judge has taken a different view. This difficulty was remarked by Lord Justice VAUGHAN WILLIAMS in 1913, when the Court of Appeal similarly overruled Mr. Justice ROWLATT in Shackleton *v.* Swift. But in the present case Mr. Justice FINLAY relied upon the affidavit of Dr. RISIEN RUSSELL, and Lord Justice SCRUTTON patently did not. Remarking that he intended no reflection upon Dr. RUSSELL in describing him as usually the principal witness for the plaintiff in lunacy cases, the Lord Justice observed that Dr. RUSSELL'S affidavit said nothing whatever about Mrs. EASTON'S case. Dr. RUSSELL had not seen her; he did not say he had seen the other doctor's affidavits; he said in general terms that a thorough physical and mental examination should always be made before certifying in a case of suspected insanity; he detailed an elaborate system of tests which he said should be applied. But, said Lord Justice SCRUTTON, a doctor coming to examine a patient in this way is not employed by the patient, and has no authority to conduct these detailed operations to all of which the patient would strenuously object. On this same point Lord Justice GREER added that if it were intended to lay down a general rule that no medical man can safely sign a certificate without carrying out all these tests enumerated in Dr. RUSSELL'S affidavit, "then I have no hesitation in saying that the affidavit ought not to be accepted by any court which knows anything about the matter." It was ridiculous, he continued, to suppose that a doctor could not without all those tests under any circumstances certify that a person should be placed under control. This common-sense and highly authoritative ruling may act as a corrective which has long been wanted.

CLINICAL RESULTS WITH ŒSTRIN.

THE progress made during the last few years in the study of the hormones of the ovary has recently been described in our columns. A longer survey made by Dr. A. S. PARKES is reviewed on p. 1367 of this issue of THE LANCET. The reason for the rapid advance is the development of methods of biological assay on the one hand, and of preparation and purification on the other, until at the present time it is possible to prepare very potent extracts from ovaries and placenta. To these sources must now be added the urine of pregnant women, a particularly rich source of the hormone. Not all material from these sources is active and it is therefore of the utmost importance that all clinical trials with these extracts of the ovary and placenta should be carried out upon biologically standardised preparations. The most definite and certain property of these extracts is their action upon the ovariectomised animal, particularly the mouse and rat, discovered by ALLEN and DOISY a few years ago. To ascertain whether any particular extract is active and to determine its potency, it is only necessary to observe whether it will restore the sexual cycle in the ovariectomised animal and to discover what dose is necessary to bring about this

result. The discredit attached to ovarian therapy in the past was due to ignorance of a reliable method of testing the activity of the preparations employed. Whether the use of standardised preparations will restore faith in this method of treatment depends on clinical results, which are not easy to assess. Mr. WILFRID SHAW[1] in this country and Dr. E. L. SEVRINGHAM and Dr. J. S. EVANS[2] in America have been trying respectively the oily and water-soluble preparations on a group of cases and have published their experiences which are encouraging though not conclusive. This is not surprising, for there is little analogy between the œstrus of the laboratory rodents, coincident as it is with the period of sexual activity, and menstruation in man and the higher primates; the difference is held to be connected at least in part with the functions of the corpus luteum. It is clear that in those patients in whom the deficiency, whilst it may be hormonal, is not primarily one of the œstrus-producing hormone of the ovary no effect can be anticipated. Moreover, the problem of dosage is not yet solved. If the correct dose is proportional to the body-weight, a woman with complete ovarian deficiency will require a dose of some 1500 rat units, an almost impracticable quantity. With the small doses available at present too much must not be expected. The distribution of the dose, however, can be controlled. The preparations used are of two kinds: oily and water-soluble. The earlier oily preparations suffer from the disadvantage that they are liable to give pain on injection, and SHAW refers to the severity of the local reaction produced. The fact that they are slowly absorbed, however, may be an advantage, since the effect of the dose is spread over an appreciable time. In animals a single injection of the aqueous preparation is much less effective than that of the same total amount of material given at frequent intervals. Aqueous preparations such as those used by SEVRINGHAM and EVANS are not followed by any local reaction, but they have to be given frequently, probably daily, to get the best results.

The hysterical tendencies associated with some of the conditions studied tend to increase the difficulties of the clinical work. In view of the fact that one of the most striking properties of œstrin is its action in promoting uterine growth in experimental animals Mr. SHAW examined the effect of the hormone in 15 cases of spasmodic dysmenorrhœa, with the typical ill-developed uterus associated with this condition. In six of these no improvement was observed, even when 50 units were given at weekly intervals; all were severe cases. In nine others the treatment was successful either in completely freeing the patients from pain or in alleviating it. The size of the uterus, however was increased only in two cases and in all the symptoms returned when the injections were stopped. The author recommends trial of the treatment in young women and where dilatation of the cervix is not successful. Not all cases respond, and if after eight weeks there is no improvement the injections should be discontinued. In five cases of primary amenorrhœa no definite effect was observed and menstruation was not established in any of the subjects. Two cases of amenorrhœa of secondary type also gave negative results. Both of these were combined with adiposity, and in each of six further patients who were not adipose menstruation followed the administration of œstrin. The results indicate that the treatment may be of value when the symptoms are of recent date. Other cases in which good results have been observed include women with irregular menstrual periods. According to SEVRINGHAM and EVANS, relief is also given in menopausal disturbances, particularly those associated with vasomotor phenomena, in which good results are reported in 10 or 11 out of 15 cases treated. Both the English and American investigators refer to the handicap of the lack of an objective index of ovarian activity in the human subject, a circumstance which together with the spontaneous improvement well known to occur in young patients, makes the scientific evaluation of any drug extremely difficult. The workers themselves consider the results obtained to be in many ways encouraging.

[1] Wilfrid Shaw: Observations on the Therapeutic Value of the Œstrus-producing Hormone of the Ovary, Quart. Jour. Pharmacy and Pharmacol., 1929, ii., 373.

[2] Sevringham, Elmer L., and Evans, Joseph S.: Clinical Observations on Use of an Ovarian Hormone: Amniotin, Amer. Jour. Med. Sci., November, 1929, p. 638.

Annotations.

"Ne quid nimis."

HOSPITAL ASSESSMENT.

WHY is it that the attempt to lighten the burden of rates borne by the voluntary hospitals has achieved so little success? The hope of total de-rating has been frustrated because it spoilt the symmetry of recent enactments framed by reformers who forgot the hospitals. The Central Valuation Committee's advisory functions have failed to achieve the uniformity in valuation which it is that body's statutory duty to promote. The Committee most helpfully suggested an equitable basis for assessing hospitals; it would have meant an advantage only less valuable than total de-rating; but the suggestion has been largely ignored and the utmost diversity of practice flourishes. The hospitals' prospect of swollen demands for rates is deplorable. The recent report on the Voluntary Hospitals in Great Britain [1] (excluding London) contains a memorandum on the present situation which makes gloomy reading. The revision of assessments consequent upon the Rating and Valuation Act of 1925 means that the provincial voluntary hospitals in England and Wales will have to pay £66,000 annually in rates where formerly they paid £44,000. It is a crushing imposition, unjust in its haphazard and anomalous incidence. Stated in terms of assessment per patient bed, the amounts vary from nothing at all in one place to £20 in another. Only 19 per cent. of the new assessments are less than £1 per patient bed; more than 12 per cent. are £5 and over. The British Hospitals Association has done its best. It has tried to obtain general support for a uniform and preferential assessment which would not exceed £1 per patient bed, such assessment to cover all those parts of the hospital that are necessary to enable it to carry out the purpose for which it is established. Unanimity in support of this reasonable proposal has been lacking. Many hospitals are willing to uphold it; a few favour independent action and other remedies. Meanwhile the financial prospect is uncertain and dark. Some local authorities are making contributions under the Public Health Act—that is to say, they take with one hand and give back with the other; this process may be satisfactory locally but it does nothing to solve the problem as a whole. If hospitals elsewhere have a greatly increased bill for rates, is the deficit to be met by a contraction of the hospital's facilities or by begging from generous donors whose charitable donations may be diminished in view of impending new taxation? There is general sympathy for the voluntary hospitals; nobody wants to see them unfairly harassed. Cannot some sensible formula be framed which will give them equitable treatment and which can be submitted to the valuation authorities with unanimous support?

THE BLOOD COUNT IN RHEUMATIC FEVER.

IT has long been recognised that rheumatic fever in children is associated with a mild leucocytosis, and the work of Swift and his collaborators[2] seemed to show that its degree bears some rough relationship to

[1] Tenth Annual Report for the Year 1928. Published by the Central Bureau of Hospital Information, 19, Berkeley-street, London, W. 1s., post free 1s. 5d.

[2] Swift, H. F., Miller, C. P., and Roots, R. H.: Jour. Clin. Invest., 1924, i., 197.

the severity of the joint manifestations. Could such a relationship be demonstrated in cases where infection falls rather on the heart muscle than on the joints, it might help us in gauging cardiac damage and the response to treatment. This possibility has recently been investigated by Dr. C. Bruce Perry,[3] working in the University Centre of Cardiac Research, Bristol. He finds that some degree of leucocytosis is common to all cases of rheumatic fever, whether the predominant feature is arthritis, carditis, or chorea. The presence of eosinophilia—which has been described as characteristic of the condition—is, he notes, associated with subsidence of the acute symptoms, and with the relative lymphocytosis which is seen when many kinds of infection are subsiding. As in most other infections, the increase of white cells in the more acute stage mainly affects the neutrophiles. The subacute and smouldering cases of carditis show only a slight and varying leucocytic response, and since it is just in these cases that an indication of the activity of the infection is most needed, Dr. Perry concludes that the leucocyte count can give us little or no assistance in measuring the progress of this disease.

X RAY APPARATUS.

To realise how rapid has been the growth and development of the X ray industry one had only to compare the exhibits at the recent annual meeting of the British Institute of Radiology with those of former years. High tension installations, radiographic and therapeutic equipment formed the three main groups of apparatus shown, and in each group there was a welcome tendency to simplification and standardisation in design. The X ray transformer has become more and more popular. The advantages of economy and freedom from contact troubles, associated with the inductive devices for the control of transformers, have no doubt led many to adopt the transformer instead of the resistance-controlled coil unit. With the erection of the grid system for the supply of alternating current to large areas, the use of the X ray transformer to the exclusion of direct current instruments would appear almost inevitable. It seems that the rating of a transformer in kilo-volt ampere hours is still widely used, although this unit is inadequate for the special requirements of radiology, and a specification for the electrical performance of transformers for X ray purposes was issued more than a year ago by the British Electrical Standards Association. General acceptance of this specification by manufacturers would materially help the buyer of high tension equipment. As a means of rectifying the current from a transformer the mechanical rectifier is fast disappearing. The majority of the transformer units of to-day are fitted with valves, the noiseless rectification of which appeals to the radiologist. Accumulated experience in the manufacture of valves has led to the production of a rectifier which, though expensive, is generally claimed to have a long life. The insertion of high tension condensers in the secondary circuits of transformers is quite common especially in deep therapy units. By means of condensers and an ingenious switch-gear some manufacturers have produced a plant which will develop a heavy milliamperage at medium voltages for radioscopy, or alternatively a small current at a high voltage for therapy. The exhibit of X ray tubes suggested that the gas tube has almost disappeared. The majority of hot cathode tubes shown were of the metalix type. The ray-proof shield which allows only a cone of rays to issue from the tube, together with the single central suspension of the latter, has led to simplification in the design of tube carriers, and supports for this type of tube are now made by most X ray firms. Attempts have been made to produce a shock-proof X ray apparatus, and a unit of this type for radioscopy was to be seen at the exhibition. In this case the transformer and tube were enclosed in an earthed metal tank which was mounted after the manner of an X ray tube. Apart from the advantage of being shock-proof, a greater flexibility of movement than is usually possible is claimed for this method of mounting both transformer and tube. A noteworthy feature of the radiographic equipment was the attempt made by some manufacturers to facilitate the taking of stereoscopic pictures in rapid succession. The stereoscopic binocular gives an excellent, though reduced, stereoscopic picture at any distance from a pair of stereoscopic radiograms placed side by side. To obviate the distortion often seen in earlier radiograms, most firms now incorporate in their equipment means whereby the X ray tube may be placed at a distance of six feet from the film. X ray manufacturers have sought to obtain greater flexibility and smoother travel of the movable parts of radiological apparatus, and the exhibits in general bore testimony to the success they have achieved.

[3] Perry, C. Bruce: Arch. Dis. Childhood, 1929, iv., 247.

THE ACTION OF LEAD ON THE CHORIONIC EPITHELIUM.

EARLY in 1925 a paper was published in the *Journal of Obstetrics and Gynæcology of the British Empire* by Prof. Blair Bell and others in which it was demonstrated that lead, in suitable doses of a suitable preparation intravenously administered, produced coagulation necrosis of the chorionic epithelium in the pregnant rabbit without damage to the maternal tissues—an effect not produced by the other metals tested. A subsequent investigation by M. M. Datnow, also a member of the staff of the Liverpool Medical Research Organisation, published in the same journal (1928, xxxv., 693), confirmed these findings, but showed that this property is more evident with certain preparations of lead than with others, and that in regard to all the preparations examined the chemotherapeutic index was not high. The importance of these observations was related to the working hypothesis of Blair Bell that malignant development in a somatic cell is a structural and functional reversion to the chorion epithelial type which is able to live independently and parasitically, and is in other respects also normally malignant, and that a toxic agent which will destroy the chorionic epithelium should—other conditions being equal—also be lethal to the cancer cell. The work at Liverpool has met both with support and criticism, the latter being no doubt often founded upon the results obtained from the employment of inefficacious preparations, but, until recently, there seems to have been no satisfactory attempt by independent workers to confirm or refute the clearly stated results obtained in Liverpool—results that, in so far as they were new, conflicted with previous views as to the manner in which lead causes abortion, of itself a well-known fact. In the recent issue, however, of the beautifully produced and illustrated *Archivio dello Istituto Biochimico Italiano*, edited by Prof. Lorenzini (1929, i., 193), N. Dallera has published with coloured histological drawings a considerable research on this subject, entitled "L'azione del piombo sulla cellula coriale," from which the work of the Liverpool School receives much confirmation.

Dallera, in his investigations concerning the abortive action of lead in rabbits, studied the action of doses smaller than those which provoked abortion, and ascertained the effects of different doses on the chorionic epithelium and on the placenta generally. In all the animals submitted to experiment the urine was examined, and subsequently a histological investigation was made of the liver and kidneys. Fifty-three animals between the eighth and twentieth day of pregnancy were used. Of these, 21 received injections of Christoni's colloidal sulphite of lead, chemically prepared. Twenty-five animals received the colloidal lead electrically prepared by Prof. Ganassini, with the addition of sodium thiosulphate, the action of which has been extensively studied by Prof. Lorenzini and Dr. Simon; to seven animals

Dezani's organic non-colloidal preparation of lead was administered. The following conclusions were reached: 1. Lead, when introduced intravehously into the pregnant rabbit in small repeated doses, shows a selective poisonous action on the chorionic epithelium. 2. The following changes in the chorionic epithelium, and further in the placenta are progressive, and depend on the dosage: (*a*) Swelling of the syncytial layer of the chorionic villi, with alterations of the protoplasm and consequent ischæmia in regard to the maternal blood-spaces of the placenta. (*b*) Necrosis of the syncytium with congestion of the placental blood-spaces. (*c*) Complete disappearance of the syncytium, breaking down of the supporting septa, and the production of hæmorrhagic areas with necrosis of the fœtal placenta. 3. The pregnant rabbit reacts to lead with toxic symptoms with smaller doses than when not pregnant. (Dallera did not attempt to define the abortion dose as was done by Blair Bell and his fellow-workers.) 4. There are no essential differences between the changes of the placenta in relation to the different periods of pregnancy. 5. The action of lead may not always be confined to the fœtal ectoderm, but some derivatives of lead may also affect the maternal organs to a degree that varies with different preparations. 6. The colloidal lead prepared at the Institute of Biochemistry of Italy acts chiefly on the placenta, and in order to produce slight temporary lesions in the liver it is necessary to inject doses four to five times greater than those which markedly damage the chorionic epithelium. (This preparation appears, therefore, to have a higher chemotherapeutic index than the preparations used in Liverpool.) 7. The metallic colloidal lead is that which best realises the essential postulate of chemotherapy—that is, the greatest divergence between the active dose and the toxic dose. 8. The distribution of the lead conveyed in different preparations varies. The colloidal lead localises itself specially in the placenta, and only in very heavy doses also in the liver (which, however, does not present any alteration). The lead sulphite and Dezani's soluble salt are found only in small quantities in the placenta, and in large amounts in the liver and kidneys with evident lesions in these organs. From these data it appears that the colloidal state of the lead is of great importance.

THE MORALE OF THE BLUEJACKET.[1]

A LITTLE book, described on its appropriately blue "jacket" as a social study of the lower deck, is worth the serious attention which its modest contents hardly claim for it. In a recent issue of THE LANCET we reviewed a study of the mental reactions of the sailors of the fleet in war by Dr. Thomas Beaton, himself then a Temporary Surgeon-Lieutenant, R.N., and thus possessing full opportunity for his investigations; and this skilled alienist concluded that "the training of the sailor has for its first aim the rendering of the individual, not into a precise automaton, but into a intelligent and coöperating personality, and in the achievement of its purpose it cannot be too highly praised"—in other words, the object of training was to turn out a good ship-mate, since incorrect conduct makes a man a bad ship-mate. How the education which has earned so high an encomium effects its purpose, what are its reactions in daily life on the lower decks of ships, we learn from Mr. Trystan Edwards's account of his three years' service wearing "the three rows of tape" on his blue collar as a seaman "for the duration" (1915–18). Judged even in comparison with the life of the public school and university man, he did not find the training wanting. It is disciplinary training, he says, which while it saves the seaman from carelessness and from panic in times of stress, gives him health, a sense of cleanliness, and steadiness of nerve, and makes him energetic and alert, as well as good-mannered. On the lower deck there is no word for good manners—they are a sine qua non; the few and new without them are called "ignorant," but it is charitably expected that they will soon acquire them. The author found the men habitually cheerful, often singing, working very hard, and always wanting sleep. And there is a significant comment that the men of exceptionally fine physique and character were nearly always from large families whose parents had both married young. He covets the bluejacket training for more of the youth of England, and concludes his important study thus: "Complete liberty and equality there can never be .....fraternity finds nowhere a greater measure of fulfilment than in the humane company of those who serve under the White Ensign." But it will surprise everyone, and especially parsons, to learn why it is the seamen like church on board (p. 123).

[1] Three Rows of Tape. By A. Trystan Edwards (ex-Able Seaman, R.N.). London: William Heinemann, Ltd. 1929. Pp. 167. 6s.

THE STUDY OF TROPICAL MEDICINE.

THE transactions of the seventh congress of the Far Eastern Association of Tropical Medicine appear in a volume[1] containing 97 communications which occupy some 871 pages. The chief subjects discussed are plague, cholera, dysentery, sprue and intestinal infections, bacteriophage, leprosy, tuberculosis, typhus-like diseases, leptospiræ, and malaria in all its aspects. To the section on plague such well-known authorities as F. P. Mackie, Wu Lien-Teh, Fabian Hirst, and N. H. Choksy appear. The Joint Meeting of the Expert Plague Committee of the League of Nations Health Organisation and of this Association stressed the importance of further inquiries into the methods of destruction of rats and fleas, the comparative epidemiological rôle of various species of fleas in plague transmission in selected areas in India, the survey of plague in wild rodents in Northern Asia, and the part played by grain and cotton in the dissemination of plague. As regards prophylaxis and therapeutics, the speedy preparation of antiplague vaccine, the possibility of producing a plague antitoxin serum, further studies on anti-plague bacteriophage and its practical application were considered. Pneumonic plague is dealt with separately in these Transactions; the incidence of bubonic plague, and its relation to pneumonic plague, is considered important, as well as the possible existence of a special ultra-virus or filter-passing form of *B. pestis*. The subject of cholera stimulated a number of communications. Lieut.-Colonel A. J. H. Russell is responsible for statistical studies in its epidemiology. C. L. Dunn and S. Khan show that cholera is not endemic in Hardwar, but is an accompaniment of pilgrimages. J. W. Tomb and G. C. Maitra, from experiences gained in Asansol Mining Settlement, believe that the non-agglutinating intestinal vibrios take on the agglutinating characteristic under certain still unrecognised conditions in the human intestine.

The dysenteries of Bengal have been studied by A. C. Ukil, who finds mild forms of bacillary dysentery to be the form most prevalent. F. P. Mackie, N. H. Fairley, and the staff of the Haffkine Institute, Parel, Bombay, contribute a report of progress on the sprue inquiry. P. Manson-Bahr, L. M. Maybury, and P. H. Martin testify to the therapeutic value of blood transfusion in sprue anæmia. S. S. Sokhey writes upon the pancreatic and liver functions in sprue. Special interest centres on the accounts of bacteriophagy and bacteriophage by F. d'Herelle. He sets out clearly his reasons for regarding the bacteriophage as a living being, an ultra-virus parasitic on bacteria and which provokes in them an extremely contagious disease. With Major R. H. Malone and M. N. Lahiri he believes that in the treatment of cholera with bacteriophage the cultures of this substance should be endowed with maximum virulence and maximum

[1] Transactions of the Seventh Congress, British India, 1927. Edited by Lieut.-Colonel J. Cunningham, C.I.E., B.M., M.D., I.M.S., Director, Pasteur Institute of India, Kasauli, British India: Chief Organising Secretary for the Seventh Congress, Calcutta: Thacker's Press and Directories, Ltd. Vol. II. 1929. Pp. 871.

activity. Lieut.-Colonel Morrison and Major C. de C. Martin state that bacteriophage alone has been proved as effective in the treatment of bacillary dysentery as is orthodox treatment given in control cases.

The leprosy section is particularly full. E. Muir propounds his latest views on the treatment with special reference to the employment of potassium iodide; R. Row amplifies his well-known work on the curative value of tubercle bacillary autolysate in leprosy; it must be remembered that it is still doubtful whether this action is specific or whether it is due to non-specific protein. E. V. Pineda contributes an important paper on the presence of the leprosy bacillus in 53 per cent. of the placenta and umbilical cord of advanced sufferers of the disease. R. Inada contributes a short comparative study of leptospiræ. R. McGuire writes on colour variations in the fungus of Dhobie's itch, and D. G. Panja believes he has cultivated the organism responsible for dandruff, which he has termed *Malassezia ovalis*. Typhus and typhus-like diseases also attracted much attention, notably from J. W. D. Megaw and C. Strickland. Under the section of Protozoology, R. Knowles and B. M. das Gupta have studied the influence of the thyroid gland on the course of a protozoological infection.

No less than 30 papers are devoted to the question of malaria, divided under three headings—control, general considerations, and treatment. Sir Malcolm Watson writes informatively on the future of malaria control in the Federated Malay States. Colonel S. P. James, Drs. W. D. Nicol and P. G. Shute have studied the habits of anopheles in relation to their rôle in the spread of malaria from observations made in England, and they have also made experiments on the treatment of malaria, from which it appears that thorough and prolonged quinine treatment of the primary attack has no more effect in preventing a true relapse than has intensive treatment by quinine during the acute phase.

A MEMORIAL TO JOHN THOMSON.

ON Saturday, Dec. 14th, a memorial to the late Dr. John Thomson was unveiled by Sir Thomas Barlow in the Royal Hospital for Sick Children at Edinburgh. The memorial takes the form of an inscribed marble panel with a bronze portrait medallion by Mr. Pilkington Jackson, placed opposite the entrance of Dundas Ward, where Thomson did such a large part of his work. In addition, a medal is to be awarded by the University of Edinburgh for a thesis or original investigation of special merit and dealing with children. Recalling Thomson's appointment in 1884 to one of the resident medical posts at the Hospital for Sick Children in London, Sir Thomas confessed that at the outset of their acquaintance he was not impressed by Thomson's personality, while some of his contemporary residents esteemed him but lightly. They little knew then what a reserve of quiet power, sound method, and good judgment lay beneath that modest, half-deprecating demeanour. A slight hesitancy of speech was the outcome of a resolute determination to cultivate accuracy of statement. Good botanist that he was, he had been trained in sound observation. When his two years at Great Ormond-street were completed and he returned to Edinburgh, Thomson was almost immediately appointed physician to the New Town Dispensary, where he soon developed a successful children's clinic, and shortly afterwards he was elected assistant physician to the Children's Hospital. His most important contribution to medical knowledge was, in Sir Thomas's opinion, his account of pyloric stenosis in infants; an exhaustive report of 100 cases under his own care during a series of years opened the eyes of medical men to the serious importance of its early recognition, and the vital indications for its treatment. In this as in all his work he was keen to share his knowledge in the give and take of real fellow workers. He was generous in acknowledging the help of his colleagues, whether older or younger; jealousy and self-advertisement were both unknown to him. Later in his career Thomson set himself to engage the interest of the mothers of mentally deficient children in simple methods of wakening intelligence and cultivating self-control. He was determined in his instructions to use no word or phrase which might discourage or humiliate the mothers, holding by the maxim, "By hope are ye saved." To those that knew him best, Sir Thomas concluded, the memory of John Thomson would always be that of a modest gentle true-hearted soul, with a passion for verification and a deep desire to widen the boundaries of beneficent knowledge. The same sentiments were expressed in other ways by Prof. G. F. Still, Dr. Logan Turner, and Dr. Robert Hutchison, who were also present to do honour to a great pædiatrician. In accepting the commemorative medal on behalf of Edinburgh University the Principal, Sir Thomas Holland, pointed out its economic as well as its humanitarian value. There was, he said, as yet no organised research into the psychology of the child under the age of five years, with the result that much harm was done in our schools through ignorance.

TREATMENT OF CATARACT AND GLAUCOMA IN MADRAS.

Lieut.-Colonel R. E. Wright's professional report[1] of the Government Ophthalmic Hospital, Madras, for the year 1928 will be of interest to ophthalmic surgeons everywhere. The average number of operations for senile cataract alone is over 1500 a year. Precautions to prevent squeezing on the part of the patient while on the table and to secure quiet afterwards include novocain injections to block the seventh nerve and into the orbit, and the drugging of the patient to such an extent as sometimes to amount to a kind of twilight sleep. Various forms of conjunctival bridge flaps have been tried during the year in order to maintain the lips of the section in contact, but the natives, it seems, are more liable to conjunctival bleeding than Westerners, and blood clot under the bridge sometimes interferes with healing. In Colonel Wright's opinion no form of bridge is so efficient as suturing the lips of the section. Various types of operation are performed, but in the great majority of cases the capsulotomy operation is chosen, usually with a peripheral iridectomy. In a proportion of cases Barraquer's intracapsular extraction is performed, a procedure not now popular in this country; but no mention is made of Colonel Henry Smith's intracapsular method.

In the Madras Hospital they classify all their primary cases of glaucoma, whether acute or chronic, into posterior segment types and anterior segment types. In the former the important factor is the increase in the volume of the vitreous; the anterior chamber early becomes shallow, but the cupping of the disc does not appear till late. In the anterior segment type, on the other hand, the anterior chamber is not shallow and cupping of the disc is an early symptom, and in these cases it is suggested the blocking of the angle of the anterior chamber takes a more important part in causation. A systematic investigation of 100 cases was undertaken along these lines, which may help towards resolving the perennial controversies. As to non-operative treatment or treatment preliminary to operation, eserine drops are the great stand-by, but in certain cases their effect was greatly enhanced by simultaneous employment of adrenalin. Glaucosan and amino-glaucosan are not so highly spoken of. In well-marked cases a decompression operation, preferably trephining, was always necessary eventually.

Elsewhere in the report there is reference to an epidemic of superficial punctate keratitis which occurred in 1928. Over 800 cases were seen before the end of that year. Like herpes febrilis it appears to be due to a non-filtrable virus, and is probably identical with the keratitis described by Herbert in

[1] Madras Government Press, 1929. Rs. 2.

Bombay in 1901, and by Kirkpatrick in Madras in 1920. The affection is known to Western ophthalmologists but not in an epidemic form.

AN IDEAL OPERATING TABLE LAMP.

WHAT the surgeon needs when he is operating is an illumination of the field, concentrated and yet practically shadowless, along with a high vertical component of intensity, ensuring penetration into deep cavities. The intense light must be confined to the wound area, but at the same time the room must be sufficiently illuminated to prevent difficulties from mal-adaptation of the eye. The high intensity should be produced without striations or glare, and the source of light should be as unobtrusive as possible. At a meeting of the Illuminating Engineering Society, held at the Home Office Industrial Museum on Dec. 10th, Mr. Ernest Stroud described a special unit designed to fulfil all these conditions. It consists of a number of prismatic plates formed into a panel or false ceiling of relatively large area. The construction of the plates is such as to refract the light rays which reach them into a converging beam of high intensity. Each plate is 12 in. square, and made up of quarter-concentric prisms, and four plates are grouped into one large lens 24 in. square of 12 in. focus length. The complete unit contains 15, 18, or 21 of these 4-plate groups, its dimensions being 6 ft. wide by 10, 12, or 14 ft. long. Over each group of plates is fitted a lamp and reflector in such relation to each other that the maximum beam strikes the centre of the operating area; thus with a 15-group system the combined 15 concentrating beams coming from different directions build up and focus their rays over the predetermined area. The method differs from a reflector system in the largeness of the area whence the light comes, which secures adequate diffusion, avoids harmful shadows, and absolutely avoids glare. The overflow from the lens system gives sufficient general illumination to avoid contrast glare, and the optical characteristics of the lens are such as to allow for the varying thicknesses of bodies and heights of tables. With a 15-lens system employing 15 lamps of 150 watts each, or 2250 watts in all, the maximum horizontal illumination is 1050 ft. candles, on a plane 45° from the vertical it is 725 ft. candles, and on a vertical plane facing the centre of the table 175 ft. candles; these high intensities being developed without any semblance of glare. The smooth sides of the glass plates are towards the source of light, and since the complete unit can be totally enclosed so as to form the ceiling of the operating theatre there need be no collection of dust and no obstruction projecting into the operation theatre.

A SCULPTOR OF YOUTH.[1]

A BEAUTIFUL book has recently appeared describing the work in marble and bronze of that accomplished sculptor, Tait Mackenzie, a professor in the medical school of the University of Pennsylvania. The importance of Tait Mackenzie's sculpture lies in the fact, as Mr. Christopher Hussey says in a critical résumé of Mackenzie's work, that we have here the first considerable attempt since the marvellous accomplishments of Athens to take for the sculptor's main subject the athletic ideal. For many years before his present appointment Mackenzie was director of physical education at McGill University, and in 1894, when he first occupied that chair, he had made few or no attempts in sculpture, though undoubtedly it was then that he was receiving the formative influences which enable him to-day to express his ideals of motion and rhythm in the human body. When, as now, athletics occupy so prominent a place in educational life it is certain that the Greeks have once again shown the way to great accomplishments for those who have the necessary receptive attention, instruction, and fine thought. The contents of Mr. Hussey's book consist largely of excellent representations of Mackenzie's best known work, with a running commentary of appreciation which though enthusiastic appears always to be justified. While the large imaginative groups will command most of our admiration—and rightly so—medical men will be interested in the portrait medallions, for they include representations of, among others, William Osler, Crawford Long, Wilfred Grenfell, Chevalier Jackson, Robert Jones, Weir Mitchell, W. W. Keen, and Charles Brockden Brown. Brockden Brown's chief claim to public interest is that he is always cited as the first American novelist, with the funny suggestion that he imitated William Godwin, but medically speaking he is remarkable in that he wrote in "Arthur Mervyn" a wonderful description of an epidemic of plague from personal observation of the horrors that fell upon Philadelphia at the end of the eighteenth century.

[1] Tait Mackenzie, a Sculptor of Youth. By Christopher Hussey. London: Country Life, Ltd. 1930. Pp. 107. With 14 figures and 91 plates. 25s.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

LVIII.

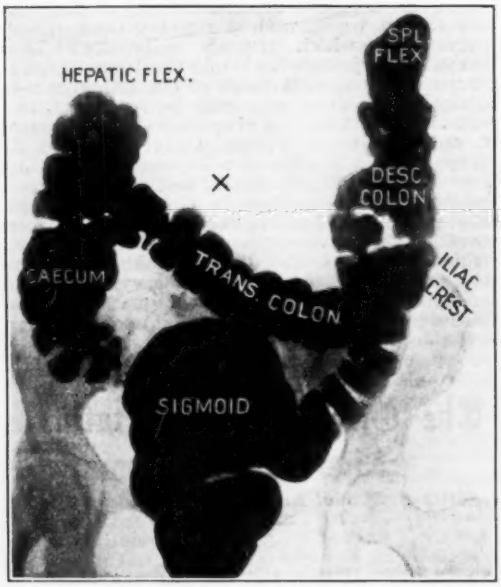
INTERPRETATION OF RADIOGRAMS OF THE ALIMENTARY TRACT.

PART V.*—LARGE INTESTINES.

THE food arrives in the cæcum in about four hours and should be somewhere near the splenic flexure in nine hours, but the times at which it arrives at different parts are so extremely variable that even approximate figures are far too definite. The normal colon as seen after feeding with barium is shown on Fig. 23. A typical picture of a normal colon distended by an enema is shown in Fig. 24. Individuals vary to an amazing degree, and even yet the movements of the large intestine are not clearly understood. There is no peristalsis in the ordinary sense and the shadow of the food in the colon remains inert hour after hour. Wingate Tod, using serial films over a long period (a very risky procedure for the subject), thinks that he detects a very slow rhythmic peristaltic movement which we certainly do not detect on screen examination. Whether it is or is not present, however, the main factor in the movement of food through the large bowel is one that is unique and is not comparable to any other in the body. It is difficult to obtain observations, for the movement occurs only occasionally, at no fixed time, and without the slightest subjective sensation. What we observe is that the haustral shadows, the divisions in the intestinal shadow, disappear and that, quite suddenly, the whole column makes a forward rush, usually from the region of the hepatic flexure, the column passing quite rapidly on, perhaps as far as the sigmoid or even to the rectum. Sometimes there is a partial rebound, but within a minute or so the haustral segmentation has again appeared and it is once more a picture of still life. Movements such as this—mass movements as they are called—occur perhaps three times a day, but we do not know, for we only detect that they have occurred by the completely altered disposition of the shadows. The first mass movements that were seen were estimated to have occurred in three seconds, but later observations suggest a quarter of a minute as a more usual time. Naturally, therefore, the rate of progress through the large bowel cannot be gauged accurately. The limits of the normal, which are wide enough in the stomach, become wider and wider as we go further down the alimentary tract until in the large intestine

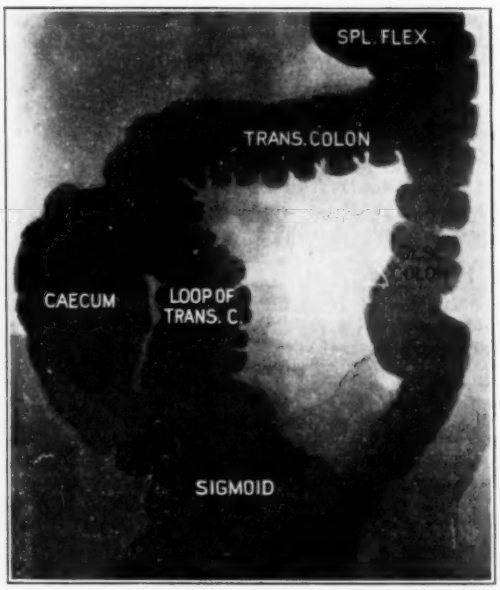
[1] Parts I., II., III., and IV., respectively on the Œsophagus, the Stomach, the Duodenum, and the Small Intestine with the Appendix, appeared in THE LANCET of Nov. 30th, Dec. 7th, 14th, and 21st.

FIG. 23.



Well-filled large intestine. Note the haustral segmentation. The hepatic flexure is rather higher and the splenic flexure rather lower than usual. The transverse colon is looped down over the descending colon. Such a loop is more common on the right than on the left—there is nearly always more or less of a loop. The ascending and descending parts of the splenic flexure are superimposed. The cæcum is not well filled—note the close anatomical relationship between the loaded sigmoid and the cæcum.

FIG. 24.



Normal colon distended with a rather large enema. Note the big loop of the transverse colon that drops down over the cæcum. The shadows in the right iliac fossa are blotted out by this loop. The haustral segmentation is usually not noted just after the enema is given but is noted within a few minutes—as the colon accommodates itself to the enema and as the discomfort passes off.

FIG. 25.

FIG. 26.

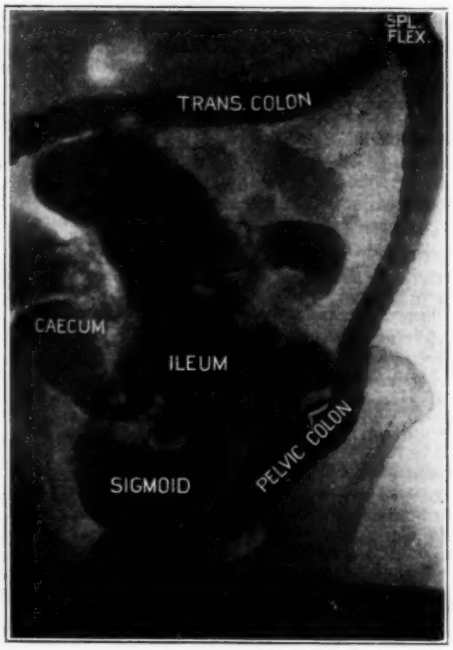


Fig. 25 shows "string" sign of colitis of the transverse colon. In Fig. 26 the opaque enema has flowed through the length of the colon and a portion of it has passed into the coils of small intestine. The "ribbon" appearance of the colon, with its absence of haustral segmentation is often associated with some forms of colitis. It is not pathognomonic, and in many cases disappears after an interval, especially if the bowels act.

FIG. 27.

FIG. 28.

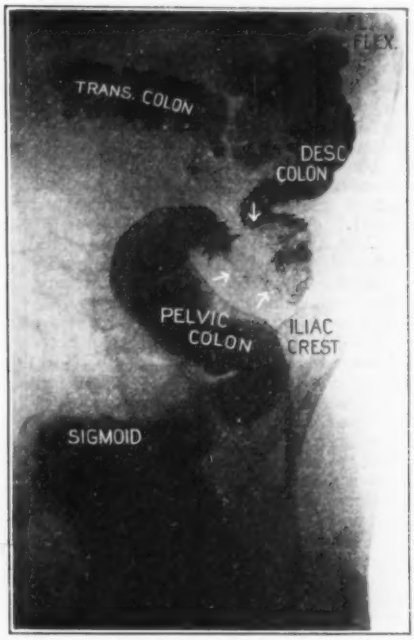


Fig. 27 shows a growth of large intestine after a barium meal, and in Fig. 28 the same growth is seen radiographed after an opaque enema.

they are almost impossible to define, making the study of constipation one of the most tricky and treacherous of subjects. Our very foundations are a quicksand of possible variables in which we make marks for our guidance—four hours to the cæcum, four and a half hours to the hepatic flexure, and so forth, but we know quite well that we shall be doing an injustice to any patient if we erect the structure of our diagnosis on such flimsy foundations. In the study of constipation, therefore, we can only accept definite extremes as our guides—incidentally never accepting the patient's statement as to whether he or she has had a satisfactory motion. On numerous occasions patients have stated that they have only had a very small motion when observation has shown that the whole of the opaque food has passed out. And sometimes they give the same reply on the following day, when we know that everything they have eaten between the two opaque meals has been voided within 24 hours. The number of patients who have an obsession as to bowel movement is not small.

We have been drilled into imagining that a movement of the bowels once in 24 hours is the normal habit to acquire, although certain extremists are nowadays trying to persuade us that this is not sufficient. But the fact of the matter is that there are extremely wide variations and what is normal for one subject is not necessarily normal for another. Two or three stools a day may be normal for some individuals, while others may live to as ripe, happy and healthy an old age on one evacuation a week. Such cases are, of course, rare, but I have seen one rosy-cheeked girl whose habit was one a month.

In the study of *constipation* we thus have to depend on following through from day to day and determining where the delay is occurring and why. Three types can be noted, namely: 1. Where the cæcum remains filled, and is of the large, sloppy type. 2. Where the food gets into the large intestine and remains inert for days. 3. Where the food reaches the rectum but there is no call to stool (dyschezia).

There are many forms of *colitis*, and there are no typical X ray pictures, with the single exception of what is known as the "string sign," that is, a string of opaque food running along the lumen of the gut (Fig. 25), but this is only seen in certain cases. There are various other appearances, none of them typical, which cannot be discussed in a brief space. The "ribbon" appearance of the colon which is often associated with colitis, but is not pathognomonic, is shown in Fig. 26.

Growths.

Growths of the large intestine may remain latent for long periods before giving symptoms. Obstruction is often the first, and probably the only, sign. The opaque food given by the mouth may fail to be held up at the obstruction. In the early stages we may find the affected area partially filled with traces of opaque food, lying in inequalities of the canal, but one can deduce nothing from the absence of such shadows. It is only in the latest stages of an obstructive lesion that the opaque food is held up actually behind the growth—apparently the food is thrown back either by the associated spasm or by the rebound when the mass movement takes place. Whatever the mechanics, however, the fact remains that it is only in the latest stages that the gut immediately behind the obstruction becomes distended and allows the opaque food to gather in it.

The picture of scattered air spaces, bounded below by fluid lines that indicate extending back pressure from an obstruction has already been referred to under the small intestine—it is obviously a case for the surgeon and the sooner he deals with it the better.

FIG. 29.

Diverticulitis. Note the small "currant" shadows left in pockets. These are usually left filled or partially filled after the bowels have been emptied.

A number of fallacies in interpretation have given rise to many mistakes, the main one being the obstruction to the flow of the enema that may be caused by the brim of the pelvis or other bony projections. By raising the pelvis and other posturing this difficulty can usually be overcome. A pint of enema fluid should flow easily as far as the splenic flexure and even beyond. With two pints it is usually possible to fill the whole of the large intestine. Definite obstruction at a certain point, coupled perhaps with the presence of a tumour, makes the diagnosis of a growth reasonably certain. Fig. 27 shows a radiogram of growth of the large intestine after an opaque meal. Fig. 28 shows a radiogram of the same growth taken after an opaque enema. The presence of filling defects must be looked for throughout the whole length, more particularly, in my experience, in the region of the splenic flexure. Rotation of the patient is always necessary to show this flexure properly—it may, however, be difficult to get satisfactory photographic records in this position. There is one fallacy connected with the palpation of thickening of the colon which should be pointed out—namely, that one can frequently palpate the pelvic colon as a sausage-shaped mass which is not always present, and seems to be due to an intermittent and painless spasm. Sometimes, at any rate, it appears to be associated with a chronic appendix, but what the connexion is I do not know.

The presence of *Hirschsprung's disease*, like that of an acute obstructive lesion, is indicated by collections of air and fluid, but the chronic clinical picture and the distended abdomen make the diagnosis clear. Incidentally some of these cases at any rate are not congenital, but are acquired, being due to some adhesion or thickening in the sigmoid or rectum. The X ray picture of these cases shows the large, distended and redundant colon. In extreme cases it would take several times the normal quantity of enema to fill the large intestine. There is no difficulty in getting the enema to flow and the obstructive lesion, if it is still present, is of a valvular type and only interferes with the downward passage of the fluid.

Diverticula of the large intestine (Fig. 29) are common and may give rise to considerable palpable thickening, but radiographically the presence of pockets of opaque material like currants, left around the intestine after the bowels have been moved, is quite positive evidence as to the nature of the condition. It is a curious fact that these pockets are much more certainly demonstrated by the residue of the opaque meal than by giving an enema. The appearances of a well-established case are quite typical, but in the early stages the diagnosis is not by any means certain or straightforward.

CONCLUSION.

As to the value of the opaque meal investigation—it depends entirely on the experience and skill of the man who conducts the examination. No elaboration of apparatus or perfection of technique in the production of X ray films can make up for lack of skill and experience in this highly specialised work in which a thorough knowledge of the medical problems involved is fundamental. The time has almost if not quite come when a surgeon should not open an abdomen, at any rate for certain lesions, unless the report of the radiologist is positive. The responsibility for operation or refraining is knocking more and more at the door of the radiologist.

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THE CITY DISPENSARY.—This old City of London charity, which dates from 1789, reports a deficiency of income over expenditure of £227 and, not for the first time a portion of the very small invested capital has had to be sold. The patients of the dispensary, who are attended free by an honorary medical staff, have made 12,707 attendances in the last two years. The Lord Mayor, who is President, is appealing for help.

Special Articles.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

ON Dec. 17th a meeting of the President and General Council of King Edward's Hospital Fund for London was held at St. James's Palace for the purpose of awarding grants to hospitals and convalescent homes, including the Thank-offering Fund Distribution.

The Prince of Wales, who was in the chair, read the following message:

Buckingham Palace.

"The King is glad to hear that King Edward's Hospital Fund is again able to distribute £250,000 and that the hospitals will also benefit so greatly by the Thank-offering Fund. His Majesty wishes the Council every success during the coming year.—STAMFORDHAM."

Continuing, the Prince said that if he took as his texts, first, the impressive little table at the end of the Distribution Committee's list of grants (see page 1382) and, secondly, the different sums of which the total was made up, he would have covered the chief activities of the Fund during the year. The ordinary distribution was again £250,000. Last year, when the Fund had reached the round quarter million, that sum was thought of as a mile-stone where it might be good policy to rest awhile, lest they went too fast and perhaps be forced to retreat; but the Distribution Committee's report showed that the work of the hospitals did not stand still and, if the distribution remained at £250,000 for more than two years, the hospitals would suffer. The Thank-offering Fund had enabled them to meet the increased demands of hospitals this year, but the continued increase in hospital work would have to be met next year by distribution beyond the £250,000. The Pension scheme for nurses and hospital officers now covered some 30,000 beds, but the growth of the scheme would mean larger grants from the King's Fund. The amount available from the Thank-offering Fund to the King's Fund was £220,000 and of this, £105,000 represented the splendid gift of "Audax" which would be invested. The special distribution of this fund included a large grant to the new King George Hospital for the extreme east of Greater London. But the £220,000 was only a fraction of the sums subscribed to Thank-offering Funds throughout the country. The whole of the 4 grammes of radium purchased with Sir Otto Beit's gift of £50,000 had been allocated among 20 hospitals, and they had this morning received for the Radium Fund £10,000 from Mr. Roger C. Parr, whom he thanked for his generous gift. After referring to the report of the committee dealing with the Local Government Act and the hospital system, His Royal Highness pointed out that coöperation between the King's Fund, the Teaching Hospitals, and the British Hospitals Association had been effected and a joint committee appointed to devise a representative Voluntary Hospital body for the consultations with the London County Council required by the Local Government Act.

The Prince closed his speech by thanking all those who had helped to carry on the work of the Fund during the year, mentioning especially Sir Cooper Perry, Chairman of the Distribution Committee, Mr. Eardley Holland, Chairman of the Radium Subcommittee, Prof. Russ, the technical adviser, Lord Donoughmore, Chairman of the Management Committee, who had also been treasurer of the Thank-offering Fund, Lord Luke, Chairman of the Revenue Committee, and, in connexion with the thanksgiving for the

King's recovery His Highness asked how could he omit to mention the name of Lord Dawson. He added that a testator, happily still living and vigorous and most emphatically anonymous, was, by his will, making the King's Fund the permanent landlord, so to speak, of a large house and grounds to be used as a convalescent home, and was setting aside a trust fund to help with its maintenance.

Treasurer's Statement.

Mr. E. R. Peacock (the hon. treasurer) said that the estimates laid before the Council in November justified a distribution of £250,000 for the second year in succession, but left no margin. Last year the cost of special pension grants was met from unexpected legacies received after the ordinary distribution had been fixed. This year the position was similar. A legacy of £29,000 had been received, and as the pensions grants amounted to £13,734, there was every reason to anticipate that they could be covered in the same way as last year. Invested funds had been increased by further sums of £7000 from the estate of Mr. Samuel Lewis and £1526 from that of Sir Julius Wernher, and by £15,000, the first of the seven yearly instalments of the gift of £105,000 from "Audax" through the Thank-offering Fund. Taking into account the additions made to general fund legacies since the date of the estimates, the receipts from that source amounted to £67,000, a figure almost exactly the same as that of last year. Annual subscriptions were slightly larger. But a smaller amount than usual had been received in donations this year. Every endeavour to ensure that the receipts from voluntary sources, which now came to £90,000 a year, must be fully maintained.

The League of Mercy.

Lord Marshall then made the annual statement on behalf of the League of Mercy. (The report of the annual meeting of the League of Mercy was published in THE LANCET of Dec. 21st, p. 1326).

Grants to Hospitals and Convalescent Homes.

The Chairman of the Distribution Committee (Sir Cooper Perry) presented the report of the Committee on the Distribution to Hospitals (including Recovery and Convalescent Branches). The report showed that 143 hospitals had applied for grants as against 141 in 1928. Ninety-four hospitals had joined the Pension scheme, as against 89 in the previous year. The total annual distribution amounted to £261,734, and when the Thank-offering Fund was added, the grand total reached £376,734. Of this, £239,799 was for maintenance, and £136,935 for schemes of capital expenditure, and it also included a grant for the building fund of the new King George Hospital at Ilford. The proposal for the provision of a single large hospital on the Ilford site, he said, was the result of the amalgamation of several schemes for providing for the needs of the increasing population of the eastern part of Greater London. It was drawn up at a series of conferences for which the King's Fund acted as convener, and in which representatives of the London County Council, the Ilford Hospital, and the local hospital funds of Barking and Becontree took part. The King's Fund made a grant of £10,000 out of the Wells legacies distribution on the understanding that the London County Council would contribute a similar sum. A grant of £2000 set aside for the extension of the Ilford Hospital had also been transferred to the building fund of King George Hospital. 2300 mg. of radium had been actually delivered to 15 hospitals out of Sir Otto Beit's gift, the remaining 1700 mg. were being delivered as fast as containers and needles could be supplied.

Lord Somerleyton (hon. secretary) presented the schedule containing the lists of awards to hospitals (including Recovery and Convalescent Branches) as follows.

*List of Awards.**

	£
Acton Hospital (of which £250 to deficit on extension)	951
All Saints' Hospital	78
Baby Clinic Hospital (Kensington) (of which £100 towards the acquisition and adaptation of new premises)	186
Beckenham Cottage Hospital	450
Belgrave Hospital for Children	1,709
Bermondsey Medical Mission Hospital	50
Blackheath and Charlton Hospital (of which £50 towards improvements)	221
Bolingbroke Hospital (of which £100 to deficit on new block)	2,218
Brentford Hospital (of which £150 towards additional staff accommodation)	267
British Hospital for Mothers and Babies, Woolwich	550
Bromley (Kent) and District Hospital (of which £200 towards extension)	375
Carshalton and District Hospital (of which £250 towards extension)	335
Catholic Nursing Institute	15
Central London Ophthalmic Hospital (of which £250 towards extension)	706
Central London Throat, Nose and Ear Hospital (of which £500 to deficit on extension)	866
Charing Cross Hospital (of which £500 towards new casualty department, &c.)	4,500
Chelsea Hospital for Women (including Convalescent Home at St. Leonards)	1,115
Cheyne Hospital for Children (including Country Branch at St. Nicholas-at-Wade) (of which £100 towards improvements at country branch hospital)	450
City of London Hospital for Diseases of the Heart and Lungs (Victoria Park)	3,664
City of London Maternity Hospital	1,304
Clapham Maternity Hospital	301
Connaught Hospital	1,556
Croydon General Hospital	1,068
Deptford and Greenwich Babies' Hospital (of which £100 towards rebuilding and extension on new site)	150
Dreadnought Hospital (Seamen's) (including Albert Dock Hospital, Hospital for Tropical Diseases, Sanatorium at Liphook, and Convalescent Home at Cudham)	1,525
East End Maternity Hospital (of which £250 to deficit on acquisition of adjoining building and its adaptation for nurses' quarters)	925
East Ham Hospital (of which £500 to reduce deficit on equipment of new general hospital)	1,545
East London Hospital for Children (including Convalescent Home at Bognor) (of which £250 to reduce debt)	3,336
Elizabeth Garrett Anderson Hospital (including Recovery Branch at Barnet) (of which £250 to deficit on reconditioning the existing hospital building in connexion with recent extension)	2,392
Eltham and Mottingham Cottage Hospital	50
Enfield War Memorial Hospital	350
Evelina Hospital for Children	1,296
Finchley Memorial Hospital (of which £200 towards new nurses' dining-room)	521
Florence Nightingale Hospital for Gentlewomen	311
Forest Hospital (Buckhurst Hill) (of which £100 to deficit on extension)	313
French Hospital	350
General Lying-in Hospital (of which £500 towards new nurses' home)	1,265
German Hospital	500
Golden-square Throat, Nose and Ear Hospital	495
Gordon Hospital for Fistula	89
Grosvenor Hospital for Women (of which £100 towards accommodation for resident medical officer and for nurses)	650
Guy's Hospital (of which £1000 towards provision of site for out-patient department extension)	12,818
Hampstead General and North-West London Hospital (of which £200 to deficit on new operating theatre and emergency beds)	3,022
Hampstead Hospital for Children (in consideration of the fact that curable cases are admitted)	200
Hanwell Cottage Hospital	50
Harrow Hospital (of which £200 towards extension)	375
Hendon Cottage Hospital	306
Hornsey Central Hospital (of which £150 towards new nurses' home)	386
Hospital for Consumption, Brompton (including Sanatorium at Frimley) (of which £200 to deficit on improvements)	1,587
Hospital for Epilepsy and Paralysis (of which £150 towards extension)	2,163
Hospital for Sick Children (including Country Branch at Tadworth)	4,378
Hospital for Women (Soho-square)	1,131
Hospital of St. John and St. Elizabeth (of which £200 towards nurses' home extension)	1,000
Hostel of St. Luke (of which £25 towards new larder)	125
Ilford Emergency Hospital	653
Infants Hospital (including Convalescent Home at Burnham) (of which £250 towards extension)	665
Invalid and Crippled Children's Society's Hospital (Canning Town)	500
Invalid Children's Aid Association Heart Hospital, West Wickham	300
Italian Hospital	300

* The Distribution Committee draw attention to the fact that it must not be assumed that the reduction or absence of a grant implies dissatisfaction.

	£
Jewish Maternity Home (of which £100 towards provision of clinical laboratory)	210
Kensington, Fulham, and Chelsea General Hospital (of which £250 towards extension)	351
King Edward Memorial Hospital (Ealing) (of which £200 to deficit on extension)	1,000
King Edward VII.'s Hospital for Officers	300
King George Hospital (see end of list)	
King's College Hospital (of which £100 towards improvements)	7,542
Kingston-upon-Thames Victoria Hospital	75
London Fever Hospital	600
London Homœopathic Hospital (of which £150 towards nurses' home extension)	1,908
London Hospital (including Recovery Branch at Reigate)	15,179
London Jewish Hospital (of which £100 to deficit on acquisition of adjoining site)	760
London Lock Hospital (of which £773 to Harrow-road Hospital and £397 to Dean-street Hospital, £250 of the latter being towards extension of out-patient department at Dean-street)	1,170
London Temperance Hospital (of which £750 to reduce debt, and £1,000 towards provision of new special departments and pay beds)	3,844
Marie Curie Hospital (of which £100 towards out-patient accommodation)	115
Medical Mission of the Good Shepherd, Babies' Home (Hoxton)	25
Metropolitan Hospital (of which £500 to deficit on nurses' home and accident wards)	4,444
Middlesex Hospital (including Convalescent Home at Clacton (of which £1,000 towards reconstruction)	9,119
Middlesex Cancer Hospital	1,205
Mildmay Memorial Hospital (of which £100 towards extension of maternity pay block)	400
Mildmay Mission Hospital	1,100
Miller General Hospital for South-East London (including Convalescent Home at Bexhill) (of which £1,000 to reduce debt, and £500 to deficit on extension)	5,869
Mothers' Hospital of the Salvation Army	650
Mount Vernon Hospital (Fitzroy-square and Northwood)	842
National Hospital for Diseases of the Heart (of which £100 to deficit on extension of out-patient department)	512
National Hospital, Queen-square (including Convalescent Home at Finchley) (of which £250 to reduce debt and £250 towards extension)	4,512
Nelson Hospital for Wimbledon, Merton, and District (of which £250 towards provision of maternity pay-bed block)	1,000
North Islington Infant Welfare Wards	75
Norwood and District Cottage Hospital	304
Paddington Green Children's Hospital (including Convalescent Home at Slough)	620
Passmore Edwards Hospital for Wood Green, &c.	152
Phillips Memorial Homœopathic Hospital (Bromley)	15
Plaistow Maternity Hospital (of which £250 towards extension)	850
Poplar Hospital for Accidents (including Convalescent Home at Walton-on-the-Naze) (of which £100 towards extension of X ray department)	325
Prince of Wales's General Hospital (including Convalescent Home at Nazeing) (of which £1,000 to reduce debt and £250 towards new out-patient department)	5,850
Princess Louise Kensington Hospital for Children (of which £200 towards further stage of new hospital)	600
Queen Charlotte's Maternity Hospital (of which £1,000 towards rebuilding and extension on new site)	2,703
Queen Mary's Hospital for the East End	4,644
Queen's Hospital for Children (including Convalescent Home at Bexhill)	4,019
Ross Institute and Hospital for Tropical Diseases (to the Hospital)	20
Royal Dental Hospital of London	320
Royal Eye Hospital	837
Royal Free Hospital (of which £1,000 towards extension)	7,424
Royal Hospital (Richmond) (of which £200 towards new operating theatre)	1,467
Royal London Ophthalmic Hospital (of which £250 towards provision of additional nurses' accommodation and wards)	2,963
Royal National Orthopædic Hospital (including Country Branch at Stanmore) (of which £250 to reduce debt and £500 to deficit on extension of country branch)	4,746
Royal Northern Hospital (including Royal Chest Branch in City-road, Recovery Branch at Southgate, and Convalescent Home at Clacton) (of which £500 to reduce debt and £250 towards provision of pay beds)	9,145
Royal Waterloo Hospital for Children and Women	2,820
Royal Westminster Ophthalmic Hospital (of which £500 to deficit on rebuilding and extension on new site)	1,296
St. Andrew's Hospital, Dollis Hill	303
St. Bartholomew's Hospital (of which £1,000 towards new operating theatres)	7,461
St. Columba's Hospital (of which £15 towards sun-blind for balcony)	431
St. George's Hospital (including Recovery and Convalescent Branch at Wimbledon) (of which £1,000 to reduce debt)	9,068
St. John's Hospital (Lewisham)	1,623
St. John's Hospital (Twickenham)	75
St. John's Hospital for Diseases of the Skin	302
St. Luke's Hospital for Advanced Cases	300
St. Mark's Hospital	484
St. Mary's Hospital	6,362
St. Mary's Hospital for Women and Children (Plaistow) (of which £250 to reduce debt and £500 to deficit on first stage of new out-patient department)	2,828
St. Monica's Home Hospital	125
St. Paul's Hospital	75
St. Peter's Hospital for Stone (of which £150 towards extension)	609
St. Saviour's Hospital for Ladies of Limited Means (Osnaburgh-street)	159
St. Thomas's Hospital	11,621
St. Thomas's Babies' Hostel (of which £100 towards new out-patient department)	125
Samaritan Free Hospital for Women (including Convalescent Home at Amersham)	1,337
Santa Claus Home (of which £25 to reduce debt and £20 to deficit on recent improvements)	120
Seamen's Hospital Society (*see* Dreadnought Hospital)	
South-Eastern Hospital for Children (Sydenham) (of which £400 towards new casualty department and pay beds)	1,235
South London Hospital for Women (of which £500 to deficit on new out-patient department)	1,682
Stoke Newington Home Hospital for Women	75
Streatham Babies' Hospital (of which £25 towards new sun-room)	50
University College Hospital (of which £250 towards extension of nurses' home)	9,187
Victoria Cottage Hospital (Barnet)	91
Victoria Hospital for Children (including Convalescent Home at Broadstairs)	2,671
Weir Hospital (Balham)	75
Wembley Hospital	100
West End Hospital for Nervous Diseases	1,538
Western Ophthalmic Hospital (of which £250 towards rebuilding)	553
West London Hospital (of which £250 to reduce debt)	5,336
Westminster Hospital	5,505
Willesden General Hospital (of which £500 to reduce debt and £250 to deficit on completed stages of extension)	3,074
Wimbledon Hospital (of which £200 to deficit on provision of children's wing)	700
Winifred House Invalid Children's Convalescent Hospital Home	25
Woodford Jubilee Hospital	105
Woolwich and District War Memorial Hospital	1,500
Special Grant.†	
King George Hospital Building Fund (towards first stage of new hospital)	2,000
Total	£261,734

Summary.

	£
Grants to hospitals (including recovery and convalescent branches) for the year 1929 out of the ordinary distribution, per list above:	
Ordinary grants	248,000
Special grants towards expenditure under the Federated Superannuation Scheme for Nurses and Hospital Officers	13,734
Total grants	261,734
Grants to hospitals, out of the special distribution of the Thank-offering Fund for the King's Recovery	115,000
Total grants to hospitals and branches for 1929	376,734
Grants to non-hospital convalescent homes	2,000
Total distribution for the year 1929, besides allocation of radium purchased with the gift of £50,000 from Sir Otto Beit	£378,734

Lord Ebbisham having seconded, the report was carried.

Sir Cooper Perry then presented the report of the Committee on the Distribution to Convalescent Homes not attached to particular hospitals, which stated that the number of applications eligible for consideration amounted to 53, as compared with 49 last year.

Colonel H. A. Wernher (hon. secretary) presented the list of awards.

Thank-offering Fund for the King's Recovery.

The Chairman of the Management Committee (the Earl of Donoughmore), in presenting the report of the Committee on the Thank-offering Fund for the King's recovery, said that he did so with profound thankfulness, and would like to say how much they had been encouraged all through by His Royal Highness's own great help and assistance at every stage of the work. He would like to emphasise the fact that the costs of collection had been nil.

The report showed the origin, history, and results of the Thank-offering Fund, and stated that it was realised from the moment the gift of "Audax" was received that the King's Fund could not by itself put forward a claim to be regarded as the sole channel for an expression of the feelings of the whole country, though the Committee pointed out that the hospitals

† See (supra) Distribution Committee's report.

of London were national institutions in the sense that they treated patients from all parts, and formed the largest centre of medical education and research. To this extent, and also because of its peculiar relation to its Royal Presidents, the King's Fund might be regarded as a national institution, but for the purposes of a thank-offering it was desirable that the public outside London should have an opportunity of selecting local charities: so provision had been made for earmarking contributions for local hospitals. The expenses were kept low, and would be more than covered by the bank interest on the money received while on deposit. The Management Committee recommend that an address be presented in the name of H.R.H. the President and the General Council to the King as Patron of the King's Fund, referring to the origin, history, results, and distribution of the Thank-offering Fund, and tendering to His Majesty their loyal congratulations on his recovery, and on his return to the full discharge of his high functions in Church and State.

Lord Luke, in seconding the recommendation of the report, said that the difference between the £113,397 contributed in addition to the gift of "Audax," and the £115,000 distributed, was, like the expenses, covered by the interest received.

Mr. Leonard L. Cohen (hon. secretary) presented the list of awards as follows:—

	£
Acton Hospital (to reduce deficit on extension)	750
Baby Clinic Hospital (Kensington) (towards the acquisition and adaptation of new premises)	150
Belgrave Hospital for Children (to enable the hospital to extinguish the deficit on the completed stages of the extension)	1,000
Bolingbroke Hospital (towards provision of new block)	150
Brentford Hospital (towards provision of additional staff accommodation)	250
British Hospital for Mothers and Babies, Woolwich (to reduce deficit on the completed stages of the new hospital)	1,500
Bromley (Kent) and District Hospital (towards extension)	300
Carshalton and District Hospital (towards extension)	250
Central London Ophthalmic Hospital (towards extension)	750
Central London Throat, Nose and Ear Hospital (to reduce deficit on extension)	1,000
Charing Cross Hospital (towards provision of new casualty department, and other improvements)	1,000
Connaught Hospital (towards extension)	500
Deptford and Greenwich Babies' Hospital (towards rebuilding and extension on new site)	250
Dreadnought Hospital (Seamen's), Greenwich (towards first stage of extension)	1,000
East End Maternity Hospital (to reduce deficit on acquisition of adjoining building and its adaptation for nurses' quarters)	1,250
East Ham Hospital (to reduce deficit on equipment of new general hospital)	2,500
Elizabeth Garrett Anderson Hospital (to reduce deficit on reconditioning of existing hospital in connexion with recent extension)	750
Finchley Memorial Hospital (towards provision of new nurses' dining-room)	300
General Lying-in Hospital (towards provision of new nurses' home)	2,500
Grosvenor Hospital for Women (towards provision of accommodation for resident medical officer and for nurses)	100
Guy's Hospital (towards provision of site for out-patient extension and to reduce deficit on recent improvements)	3,000
Hampstead General and North-West London Hospital (to reduce deficit on provision of new operating theatre and emergency beds)	300
Harrow Hospital (towards extension)	300
Hornsey Central Hospital (towards new nurses' home)	600
Hospital for Consumption, Brompton (to reduce deficit on recent improvements)	800
Hospital for Epilepsy and Paralysis (towards extension)	350
Hospital for Sick Children (towards provision of wards for recovery cases at country branch)	700
Hospital of St. John and St. Elizabeth (towards enlargement of nurses' home)	800
Infants Hospital (towards extension)	750
Kensington, Fulham, and Chelsea General Hospital (towards extension)	1,250
King Edward Memorial Hospital (Ealing) (to reduce deficit on extension)	800
King George Hospital (to the building fund for the first stage of the new hospital)	10,000
King's College Hospital (towards improvements)	150
London Homœopathic Hospital (towards nurses' home extension)	600
London Jewish Hospital (to reduce deficit on acquisition of adjoining site)	100
London Lock Hospital (towards extension of out-patient department at Dean-street)	750
London Temperance Hospital (towards provision of new special departments and pay beds)	1,000
Marie Curie Hospital (towards provision of permanent out-patient accommodation)	100
Metropolitan Hospital (to reduce deficit on new nurses' home)	3,500
Middlesex Hospital (towards reconstruction)	14,000
Mildmay Memorial Hospital (towards extension of maternity pay block)	100
Miller General Hospital for South-East London (to reduce deficit on extension)	12,000
National Hospital for Diseases of the Heart (to reduce deficit on extension of out-patient department)	500
National Hospital, Queen-square (towards extension)	750
Nelson Hospital for Wimbledon, Merton, and District (towards provision of maternity pay-bed and child welfare block)	1,250
Plaistow Maternity Hospital (towards extension)	500
Poplar Hospital for Accidents (towards extension of X ray department)	150
Prince of Wales's General Hospital (towards provision of new out-patient department)	1,500
Princess Louise Kensington Hospital for Children (towards next stage of new hospital)	800
Queen Charlotte's Maternity Hospital (towards rebuilding and enlargement on new site)	9,000
Queen Mary's Hospital for the East End (to extinguish deficits on out-patient department and on maternity isolation block)	2,000
Royal Free Hospital (towards centenary extension scheme)	5,500
Royal Hospital (Richmond) (towards provision of new operating theatre)	300
Royal London Ophthalmic Hospital (towards provision of additional nurses' accommodation and wards)	750
Royal National Orthopædic Hospital (to reduce deficit on extension of country branch at Stanmore)	4,500
Royal Northern Hospital (towards provision of pay beds)	1,500
Royal Westminster Ophthalmic Hospital (to reduce deficit on rebuilding and enlargement on new site)	1,000
St. Bartholomew's Hospital (towards new operating theatres)	2,000
St. Luke's Hospital for Advanced Cases (to reduce deficit on new hospital)	100
St. Mark's Hospital (to reduce deficit on extension)	100
St. Mary's Hospital for Women and Children (Plaistow) (to reduce deficit on first stage of new out-patient department)	3,500
St. Peter's Hospital for Stone (towards extension)	400
St. Thomas's Babies' Hostel (towards provision of new out-patient department)	100
Seamen's Hospital Society (*see* Dreadnought Hospital)	
South-Eastern Hospital for Children (Sydenham) (towards provision of new casualty department and pay beds)	600
South London Hospital for Women (to reduce deficit on new out-patient department and nurses' quarters)	1,500
University College Hospital (towards extension of nurses' home)	750
Western Ophthalmic Hospital (towards rebuilding)	500
Westminster Hospital (towards provision of annexe for radium patients)	1,000
Willesden General Hospital (to reduce deficit on completed stages of extension)	750
Wimbledon Hospital (to reduce deficit on provision of children's wing)	500
Woolwich and District War Memorial Hospital (to reduce deficit on first stage of new hospital)	5,000
Total	£115,000

Voluntary Hospitals and the Local Government Act.

In the absence of the Vice-Chairman of the Voluntary Hospitals (Local Government Bill) Committee (the Rt. Hon. Hugh P. Macmillan, K.C.), Sir Edward Penton presented a report describing a draft scheme for a body representative of the Voluntary Hospitals of London to confer with the London County Council, under Section 13 of the Local Government Act.

The Voluntary System and the L.C.C.

The Chairman of the London County Council (Lord Monk Bretton) said that he thought the London County Council would welcome most cordially the coöperation of the Voluntary Hospitals of London in the extremely difficult and onerous duty of making adequate provision for the sick of London, and he was glad to be able to say that the draft scheme of representation referred to had been approved by the Central Public Health Committee of the Council, subject to one or two minor observations. It would, of course, in its final form be subject to the approval of the Council itself. It was the well-known policy of the Council for the last 20 years to do everything in its power to promote the welfare of the Voluntary Hospitals of London, and to seek their active coöperation in carrying out the various duties of the Council in connexion with the treatment of the sick. He believed that the County Council desired that the harmonious coöperation and happy relationship which

had always existed between it and the Voluntary Hospitals should not only continue, but, if possible, should be still further extended, in the near future.

Sir William Collins trusted that the future of the voluntary system would be safeguarded, whatever might be the progress of municipalisation.

Hospitals and Motor Accidents.

Lord Ebbisham referred to the very important Bill before the House of Lords that day on which a proposal had been made which would be very helpful to the Voluntary Hospitals.

Lord Luke said that his amendment to the Motor Traffic Bill would provide that in the event of any patient being carried to a hospital, the hospital should receive recompense for curing that patient. At the present moment, in regard to more than nine-tenths of those who were taken to hospital, the hospital had to pay. If the amendment were added to the Bill, then in future the compulsory insurance would include up to £4 a week for the hospital for the out-of-pocket expenses, up to a maximum of £25. It would only cost the owner of a motor a premium of 5*s*. a year, and he should think the motorist would feel more comfortable if he held such a policy.

Arrangements for 1930.

The Prince of Wales said that Viscount Ullswater, whose wise advice the Fund would miss, had been compelled to discontinue his service on the Council owing to the pressure of his numerous duties. The Rev. Owen Spencer Watkins was being invited to serve in the place of the Rev. W. T. A. Barber, who had left London and was unable to continue his membership. There would be a change in the title of the Voluntary Hospitals (Local Government Bill) Committee which would now be called the Voluntary Hospitals (Parliamentary) Committee, thus enabling it to consider any other Bills that might affect hospitals. His Royal Highness also mentioned that during his forthcoming absence in South Africa he proposed to delegate his powers, as President, to a Committee consisting of the Lord Chancellor, the Speaker of the House of Commons, and the Governor of the Bank of England.

On the motion of Lord Donoughmore resolutions delegating powers to committees were passed, and the usual votes of thanks terminated the proceedings.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

School Health Administration.

THE Department of Health for Scotland and the Scottish Education Department have issued a joint memorandum on school health administration as affected by the new Local Government Act. This document, which is an excellent summary of the whole system of school health administration, is too condensed to be summarised further; but medical officers and school medical officers, as well as members of the new education committees, ought to make themselves familiar with every word of it. The new committees will be responsible for over 800,000 children—that is, roughly one-sixth of the whole population of Scotland—and the supervision of this large group continues during nine or ten of the most critical years of life. The school-child spends some 2000 days in the school environment, and the school health service has a long and unique opportunity for influencing the health and habits of the rising generation.

Proposed Clinic for Rheumatic Children in Edinburgh.

The public health committee of Edinburgh town council have agreed to recommend the establishment of a clinic for rheumatic children. Dr. William Robertson, the medical officer of health, suggests that a system of voluntary notification of rheumatism should be started, the notifying practitioner being invited to say whether hospital or other special treatment is required. The notification will give a rough indication of the incidence of early rheumatism—under which heading Dr. Robertson includes rheumatism, growing pains, chorea, St. Vitus's dance and pains in the joints accompanied by fever—and medical men will be invited to send patients for critical examination at the hands of an expert.

Dr. A. S. M. Macgregor, in his current bulletin on the health of Glasgow, says that November proved a favourable month. The general death-rate was 12·2, against 12·8 for November, 1928, and in one of the weeks it fell to 10·5, the lowest figure yet recorded for the month. Measles and pneumonia, though prevalent, showed a relatively low mortality, but a testing time for these diseases will come in January and February.

At the recent conference of the Scottish National Poultry Council, Mr. J. M. Caie, of the Department of Agriculture, sketched what has been done in arranging egg-laying tests during the last five years in Scotland. It has been found, he said, that the average number of eggs per bird of all breeds, and for the whole five years, ranged from 182 to 193. In 1908 there were just over 4,000,000 fowls in Scotland, and the average production of eggs per hen in that year was estimated at 72. In 1913 the number of eggs per hen in Scotland was given as 84, and in 1925, when the last census of production was taken, the estimate had risen to just over 100 eggs per hen per annum. These figures are not, of course, absolutely accurate; but they probably represent pretty fairly an actual increase in production.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Treatment of Drug Addicts in New York City.

WHEN Commissioner Richard C. Patterson, Jr., took charge of the New York City Department of Corrections in 1928, he found no uniform plan in operation for handling the 1500 drug addicts that come under the supervision of the department. A committee under the chairmanship at first of Dr. William R. Williams, and later of Dr. Alexander Lambert was appointed, and has issued its report.[1] Two major problems are dealt with in this report: (1) The problem of withdrawal of the drug in the shortest possible time; and (2) the ultimate rehabilitation of the addict. In a special ward at Bellevue Hospital, a number of different methods of withdrawal were studied. In order to have a standard on which to base results, it was agreed to use 100 patients in each method, and the symptoms selected as giving the best index of the condition of these patients on withdrawal were (1) gastro-intestinal symptoms; (2) muscular symptoms; (3) restlessness, both physical and mental, and (4) prostration, subjective and objective. Each of these symptom groups was recorded as absent, moderate, marked or excessive. Narcosan was first studied, and it was found to be no specific for drug addiction, nor to diminish the craving for narcotics after withdrawal. Withdrawal symptoms were influenced unfavourably, the gastro-intestinal symptoms being more severe than in abrupt withdrawal without any drug. Among other drugs tested were atropine, scopolamine, a number of depressants of the central nervous system (chloral hydrate, phenobarbital, paraldehyde, bromides), magnesium sulphate and iso-amylethyl barbiturate. The results in every case were unsatisfactory. The research was then turned to gradual withdrawal without substitute drugs. They find that "the reduction treatment, especially if carried out over a period of 14 days or more, is the most humane, in that it involves the least suffering. It is also the safest,

[1] Jour. Amer. Med. Assoc., 1929, xciii., 1297.

as regards danger to life, and can be used in any case of drug addiction." They recommend that all addicts undergoing treatment be under capable medical supervision, that those whose general condition warrants it, be subjected to abrupt withdrawal, and that those not included in this class be given the reduction treatment.

It is recognised that after their release addicts will suffer again from the craving for the drug. The committee feels that much may be learned from past and present attempts at rehabilitation in New York, but that a new plan must evidently be developed to meet local conditions. Certain basic principles are laid down. The addict must learn a trade or line of work by which he may be self-supporting. A position must be found for him when he is ready for it. His progress for a number of years must be supervised, and he must be brought to a state of mind whereby he becomes coöperative and honestly desires to be permanently free of his habit. They dwell also on the importance of making careful choice in the personnel and location of the centre, and in its equipment. Some arrangement must also be made whereby the addicts will not be free agents until finally discharged.

Consumption of Water.

The average daily consumption of water in 58 cities of Great Britain is said to vary from 17 to 84 U.S.A. gallons per capita. In most American cities the consumption exceeds 100 gallons per capita, though in some cities, such as San Francisco, where the water supply is metered, the consumption does not greatly exceed 70 gallons. Why do we use so much more water than Europeans? This question is discussed in a recent paper by Mr. Abel Wolman, the editor of the *Journal of the American Water Works Association*. He believes that only a part of our excess consumption is to be attributed to waste, and to the greater availability of sources. Much, he thinks, must be due to the greater demand in this country for sanitary conveniences. The sale of bath tubs here increased, it appears, from 415,496 in 1919, to 1,101,000 in 1927, in which period the population increased by only 15 per cent. Whether or not the use of so many bath tubs should be considered wasteful Mr. Wolman admits may be a matter of opinion. In Beverley Hills, California, the per capita consumption is over 400 gallons, although the water is metered. The residents are wealthy, and indulge in private swimming pools, as well as numerous bath-rooms in their luxurious homes. Does this spell "waste" or "a higher standard of living"?

Drug Stores and Venereal Disease.

The corner drug store, so-called because almost every street corner can boast of at least one of them, is a shop where you may buy ice-cream, "soft" drinks, newspapers, tobacco and many other things besides drugs. But like his English equivalent, the chemist, an American drug-store clerk is not unwilling to offer also medical advice for which he makes no charge, and the people seem ready enough to accept his recommendations. Thus an investigator for the American Social Hygiene Association who asked 100 young men, selected at random in public places, where he might get advice for venereal disease, was advised by no less than 42 to get it at a drug-store. Twenty-four directed him to a physician, 16 to a clinic, four offered home remedies, and 14 withheld advice. A questionaire was sent to all druggists in this same city, asking how many applicants they had for venereal disease advice. Replies were received from 237, who between them acknowledged 2355 applications from alleged venereal disease patients for advice, remedy without a physician's prescription, or treatment. One-third of the druggists admitted giving treatment to such patients without prescriptions. Forty-four per cent. had suggested that the patient go to a clinic or to a physician, while 23 per cent. did not state what their advice had been.

Blood Calcium.

The importance of maintaining blood calcium at the normal level is brought out in two recent reports. Drs. E. V. McCollum and Henry Klein, of the Johns Hopkins School of Hygiene, have conducted a series of experiments on pigs with diets of varying calcium content. These animals were selected on account of their omnivorous habits, because of the comparatively long suckling period, and because they have two sets of teeth. Three types of diet were offered to three groups of pigs, one of normal calcium content and one each of subnormal and high calcium content. Although the diet deficient in calcium was softer than the other diets, the teeth of pigs eating this diet were rapidly worn down to the gum margin. The teeth grew more slowly, and were less calcified (as shown by X rays) than those of the controls. Malpositions were about three times as common. Malocclusion was found to be characteristic of pigs that had an inadequate calcium allowance during the first year and adequate calcium thereafter. The experiments were carried out under a grant from the Research Committee of the American Dental Association. At the same time, Dr. Walter Timme, of the Neurological Institute, announces that parathyroid deficiency, leading to abnormally low blood calcium, has very definite influence on behaviour. Patients with hypoparathyroidism are prone to sudden anger on very slight provocation, and are unadaptable and uncompromising. They constitute problem cases in the home, at school and in every environment where they may be found. Their behaviour eccentricities may indeed become so extreme as to lead to certification.

Medical Service by Easy Payments.

A private corporation has offered one solution for the problem of the high cost of medical care. It has been chartered in California with the avowed object of applying the instalment system to the purchase of medical and dental service. If a patient needs operative treatment, the company will take care of the charges under contract for repayment over a specified period of time.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

The Yellow Peril.

AMONGST many tribulations India has much to be thankful for in the immunity she has so far enjoyed from certain tropical diseases which might have been expected to find easy entry. Jigger, for example, never seems to have obtained a real hold, though sufferers from the disease must continually be arriving from East Africa. The outstanding instance is, of course, the importation of yellow fever, a danger which has been much increased by the development of air travel. In a recent number of the *Indian Medical Gazette* the Surgeon-General of Madras commenting on the situation made good two points. One is that the Indian stegomyia, *Aëdes egypti*, is capable of conveying the infection; the other that a person who has been infected in West Africa may cross the Indian frontier by air before the infective stage of the disease has been reached. It would be quite possible for an attack of yellow fever to escape recognition by being mistaken for influenza or febricula, and if such an unrecognised case were introduced to a place where suitable mosquito vectors exist no ordinary precautions could prevent the rapid extension of the disease. Dengue, says the Surgeon-General, is known to spread like wildfire when infection occurs amongst a susceptible population, and as yellow fever is carried in exactly the same manner it is reasonable to believe that an outbreak would speedily grow beyond control. Under these circumstances, he argues, we have to choose between the comparatively slight inconvenience

which would be caused by interference with air traffic between West Africa and the eastern countries and the appalling results which might follow the spread of yellow fever to India and the Far East. It is satisfactory to know that the Public Health Commissioner, the Government of India, and the Secretary of State are alive to the danger, and that international regulations are likely to be framed to meet it.

Jail Reports.

One Indian jail report is very like another, and that which furnishes a text for these remarks is no exception to the rule. There is much in it to justify a feeling of pride in the department. It is common knowledge that the general arrangements in the jails are excellent, the housing is up to date and adequate, the food sound and plentiful, and even if there is technically some overcrowding, the normal scale is so ample that it is not likely to have an injurious effect. The general health of the inmates is good; the mortality of 8·6 per 1000 is far below that of the population outside the walls. A great majority of the discharged prisoners show an increase in weight, and no doubt many of them carry away something more on the credit side, having been taught a trade. What, then, it may be asked could be further desired? The answer is to be found in a chapter headed "Educative, Moral and Religious Influences in Prisons" of Sir Evelyn Ruggles Brise's "The English Prison System" (1921). In British prisons books of a moral and instructional character are issued freely to all who can make use of them, lectures are given, and discussions take place on subjects chosen by the prisoners themselves. A summary of current news is read out weekly. Daily religious services are made attractive by the aid of music. Music is also offered in the form of entertainments by choral societies, and in a large American prison musical training has long been given to convicts, with the result that many of the men were able to earn a livelihood after discharge, and the percentage of relapse to crime was definitely lowered. Surely the time has arrived when every Indian provincial prison return should have a heading for educative, moral, and religious influences, and show some substantial progress under it every year. Assistance to discharged prisoners is another direction to which philanthropic effort might be usefully directed.

The Services.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg.-Lt. R. M. Buchanan to be Surg.-Lt.

ROYAL ARMY MEDICAL CORPS.

Maj. J. W. C. Stubbs is secd. for serv. under the Colonial Office.

Capt. B. C. W. Pasco relinquishes his temp. commn. and retains the rank of Capt.

ARMY DENTAL CORPS.

Lt. A. F. D. Shapland, temp. Dental Surg., Gen. List, to be Lt. (on prob.).

TERRITORIAL ARMY.

Maj. H. E. McCready to be Lt.-Col. and to comd. the 143rd (S. Midland) Fd. Amb., vice Lt.-Col. (Bt. Col.) H. F. Humphreys, vacated.

Lt. F. W. Crook (late 5th Bn. K.R.R.C., Spec. Res.) to be Lt.

ROYAL AIR FORCE.

W. J. Cotter is granted a temporary commission as a Flying Officer.

Flying Officer B. A. Porritt is transferred to the Reserve, Class Di.

BRITISH HOSPITAL FOR MOTHERS AND BABIES.—Princess Mary recently opened a new administrative block and clinic department of this Woolwich Hospital, which has been built at a cost of £40,000.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some 1928 statistics of seven English administrative counties, the island of Guernsey, and of the "landward" or extraburghal areas of two Scottish counties:—

Name of district and estimated (R.-G.) population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Durham (949,300)*	21·1	11·5	1·04	1·01	2·2	1·4	80	37	5·5
Staffordshire (712,080)*	19·2	10·5	0·73	1·19	1·6	1·3	62	—	3·6
Cheshire (663,280)	14·9	11·4	0·75	1·41	1·6	2·0	58	28	5·2
Hampshire (427,100)	17·1	10·7	0·71	1·48	1·2	2·0	46	16	2·9
Cumberland (210,600)	17·9	12·3	0·84	1·48	1·8	1·9	63	27	5·3
Huntingdonshire (56,320)	16·9	12·6	0·82	1·97	1·3	2·0	45	16	5·2
Rutland (17,960)	14·5	11·3	0·50	1·44	0·9	2·5	46	19	7·6
Guernsey (39,000)	20·8	12·4†	0·82	1·61	1·2	1·6	59	23	1·2
Fife (110,372)	19·2	11·3	0·62	1·02	1·5	1·4	82	38	6·1
Dumfries (45,800)	18·8	13·7†	1·03	1·29	2·0	2·3	73	24	3·5

* Adjusted for alteration of boundaries during the year.

† Standardised—Guernsey 9·9, Dumfries 12·0.

Relation of stillbirths to live births: Durham, 2·8 per cent.; Huntingdonshire, 3·0 per cent.; Rutland, 2·7 per cent. Guernsey, 3·6 per cent.

Durham County.

Dr. T. Eustace Hill says that the infant mortality-rate is the lowest ever recorded in the county. As an unsatisfactory feature of 1928, he notes the very marked reduction in the number of new dwellings available for a population over 30 per cent. of which is overcrowded. The much needed substitution of water-closets for privies has not made satisfactory progress, possibly owing to the prevalent trade depression. The prevalence of small-pox was less, 1124 notifications with 3 deaths, as compared with 5111 cases and 19 deaths in 1927. The notifications of encephalitis lethargica numbered 21, and the deaths 33. There were 189 notifications of puerperal fever and pyrexia with 9 deaths, whilst the deaths from other accidents and diseases of pregnancy and parturition numbered 103. This low proportion of maternal deaths due to sepsis was somewhat increased by the investigation of 88 maternal deaths. The principal causes of these investigated deaths were:—puerperal sepsis, 13; eclampsia, 16; embolism, 9; toxæmia, 7; postpartum hæmorrhage, 5; and antipartum hæmorrhage, 10. The notified cases of ophthalmia neonatorum numbered 140, and all cases of inflammation of the eyes of newborn children were followed up by the health visitors. The damage done to survivors from ophthalmia was one case of total blindness and another of impaired sight in one eye. Of the 563 stillbirths, 535 were legitimate and 28 illegitimate; 149 occurred in a first pregnancy; 1 in a twenty-third; 1 in a twentieth; 3 in a sixteenth; 1 in a fifteenth; and 3 in a fourteenth. The total pregnancies of these 563 mothers was 2453, of which 735 resulted in stillbirths. Among the stillbirths there were 36 sets of twins, including one of joined twins.

During the year a progressively increasing number of cases of skin tubercle (chiefly lupus, some scrofuloderma, and a few cases of tuberculosis cutis verrucosa) were sent to the skin department of the Newcastle Infirmary for ultra-violet therapy. Sir Robert Bolam says the most striking feature of the treatment is the disappearance of unsightly lesions attendant upon secondary pus infection, enabling the patient to go about with less physical and mental discomfort, but he finds that exposure to ultra-violet rays is not by itself sufficient to eradicate tuberculous lesions of the skin, but needs to be combined with other methods. Cases are also sent to Newcastle for radiographic examination by Dr. H. E. Gamlen, and considerable use was made of radiography in the oblique position of the thorax as an aid to the diagnosis of enlarged tuberculous glands in the mediastinum. The high death-rate from tuberculosis in Jarrow is the subject of a special investigation, the death-rate in 1928 from lung tuberculosis being 1·29 and from all forms 1·65. Young adults suffer in particular, and in many the disease tends to produce scattered foci with rapid caseation, and to terminate fatally after a short illness in spite of sanatorium or other treatment. This type of lung tubercle is met elsewhere on Tyneside and in other parts of the county, and resembles the acute type met with in races which have developed no immunity.

There is still much room for improvement in the effluents from collieries and by-product works. The department of scientific and industrial research held a conference of interested authorities and industries in October with regard to a proposed thorough biological survey of the river Tees, which was to be the first of its kind. The local representatives objected to being saddled with the cost of an investigation which was admitted to be one of national importance.

Staffordshire.

Dr. W. D. Carruthers includes in his report many details as to improvements and deficiencies in the water-supplies, sewage disposal works, and housing conditions of the 29 urban and 18 rural districts which make up the administrative county. The new houses built in 1928 were 2488, compared with 4219 in 1927. The local authorities built 1356, as compared with 2613 in 1927. However, at the end of the year there were 1480 houses in course of erection, compared with 210 in 1927. Much overcrowding still exists, and until it is possible to construct houses at lower rentals overcrowding, unhealthy areas, and slum dwellings cannot be dealt with in any drastic fashion. The systematic examination of milk samples for tubercle began in March, and during the first year 83, or about 6 per cent. of 1346 samples were found to be tuberculous. Eighty-two outside complaints of tuberculous milk produced in the county were received, and as a result 48 animals were slaughtered under the Tuberculosis Order. In addition, two cows had died and seven been disposed of by the owners for slaughter. Staffordshire made 13 complaints of tuberculous milk sent in to the county from outside, but the investigation by the outside authorities had a negative result in nine instances. The county began the year with one farm licensed for Certified milk, and three licensed for Grade A (T.T.), and ended the year with six licences for Grade A (T.T.), the Certified milk licence having been relinquished. Samples of all graded milks, including Grade A, were examined every month. Of 597 such samples, 525 were satisfactory, 72 not satisfactory, and 4 contained tubercle bacilli. It is not mentioned whether the tubercle bacilli were confined to Grade A milk or indicated a failure to maintain a tuberculin-tested herd tubercle free.

Both the death-rate from all causes and the infant mortality-rate were the lowest ever recorded in the county. There were 150 notifications of small-pox and one case in an old man proved fatal. There was an increase in diphtheria, chiefly in urban districts; the cases numbered 973 and the deaths 60. In some of the most affected southern districts immunisation work was arranged for in 1929. Of 23 cases of encephalitis lethargica, 21 ended fatally. There were 138 notifications of dysentery in the rural districts, 136 being at two mental hospitals. In one of the mental hospitals, which suffered simultaneously from an outbreak of typhoid fever (17 cases), there were 101 cases of dysentery, and the specimens examined showed that the causal organism was the Flexner bacillus. The new cases of venereal disease treated at the clinics were about the same as in the previous year, but the attendances were considerably better, and the defaulting was less. The confinements attended by midwives numbered 10,523, being 76·5 per cent. of the total births. The midwives notified 208 stillbirths (i.e., 2 per cent.) in their practices, and sent for medical help in 26 per cent. of their cases.

Cheshire.

Dr. Meredith Young reports among the features of the county tuberculosis scheme:—a slight increase in the number of notifications and deaths; a large increase in the attendances at orthopædic clinics, owing to the fact that the after-care scheme is now functioning throughout the country; the attendances at hospitals for special treatment were doubled, largely owing to the increase in artificial sunlight treatment; and a specially gratifying feature was the larger number of consultations between practitioners and tuberculosis officers. The bona fide midwives, who numbered 226 when the county took over inspection, are now only 37, and with the passing of the old-fashioned midwife many old superstitions associated with childbirth also pass, says Dr. Young. There are still nine midwives who cannot take the temperature or pulse. The new midwives do not receive adequate remuneration. The county council subsidise five midwives in districts where they cannot make a living. Four receive £60 and one £80 in addition to the fees they earn. A grant is made to two midwives annually towards attendance at a month's refresher course at Plaistow Maternity Hospital. In the 36 registered maternity homes there were 363 births, 18 of which were stillbirths. Of these births, 118 occurred in Bromborough Pool Home. There are still a number of unnotified births, knowledge of which is only obtained through the registrars. Investigation showed that at the end of the sixth month 65 per cent. of the mothers in rural districts were breast-feeding and 61 per cent. of those in urban districts. The illegitimate births numbered 368, of whom 39 died—an infant mortality-rate of 106. An inquiry into the circumstances of 114 illegitimate infants showed that the conditions were quite satisfactory in 103, fairly satisfactory in 9, and unsatisfactory in 2 cases. Towards the end of 1928 the first antenatal clinics were arranged for, under the care of obstetrical specialists, at Congleton, Runcorn, and Sale respectively, to begin work in 1929. Expectant mothers from the surrounding district have also been enabled to attend the antenatal clinic at Ashton-under-Lyne Infirmary.

Increased interest, Dr. Young states, is being manifested by the dairy industry in the purity of milk. The experience of Manchester and Salford, however, is that a larger percentage of tuberculous milks come from Cheshire than from other counties. Dr. Young mentions that as the result of outside complaints of tuberculous milk 152 tuberculous cows were slaughtered. There is a good deal of slackness shown by local authorities, both as to the removal of refuse and the management of tips. There is much variation in water-supplies—thus in Nantwich R.D. there are no fewer than 18 townships with no public water-supply, whereas Northwich R.D. is carrying out its water-supply duties "in a highly laudable fashion." The appointment of a new sanitary officer has led to an improvement in sewage disposal and the prevention of rivers pollution. Dr. Young hopes that all the authorities concerned will support the county council's scheme for a joint committee to deal with the pollution of the river Dee.

Hampshire.

Dr. W. J. Hart, acting county medical officer, describes the arrangements for maternity beds. An antenatal clinic is held bi-monthly at the Royal Hants Hospital, by means of which abnormal cases are booked for the hospital and normal cases for the maternity home managed by the Winchester Maternity Society, and subsidised by the county council. During 1928, 130 cases were admitted to the hospital and 157 to the home. In addition, 31 county cases were admitted to ten other hospitals and homes. The net cost to the county council for these 318 patients was £7 per case. The M. & C. W. centres now number 100, and are managed by a body of 550 voluntary workers. The county council's contribution to the expenses of these centres is £600 a year. Arrangements have been made for the establishment of 14 antenatal clinics. The clinic at Basingstoke will be under the charge of a practitioner with considerable obstetric experience, but the obstetric qualifications of the medical officers of the other 13 clinics are not mentioned. For the purpose of the puerperal fever, &c., regulations, 12 consultants have been appointed, and during the year this facility was utilised in 13 instances. Midwives attended 76 per cent. of the 7818 births, and more than half of their patients paid the insurance fee of 5*s.* per case to cover the expense of medical aid. For the 2987 insured women a doctor was called in in 48 per cent. and the net cost to the county council was £1109; for the 2724 uninsured women a doctor was summoned in 29 per cent. and the net cost to the council was £585.

The Hants County Council decided not to delegate their powers under the Nursing Homes Registration Act, and in response to applications registered 25 premises. There are still isolated districts without midwives, and the county council undertakes the refund of the expenditure up to £600 a year of the County Nursing Association in providing for these districts. The Nursing Association during last year only spent £118 in this extension of service. In Hampshire it is not found advantageous for district nurses to act as school nurses, tuberculosis nurses, or health visitors. Owing to the unreasonable delay in the notification of tuberculosis an arrangement was made in June for the registrars to report deaths from tuberculosis as they occurred. During the rest of the year the registrars reported 136 deaths, and of these 50 had not been notified! The 71 county council shelters are well used and appreciated. The sanatorium at Chandler's Ford has been fully occupied by 26 women and 20 children, and the sanatorium at The Mount, Bishopstoke, with 72 beds, gradually filled with suitable cases, and has been fully occupied since January, 1929.

Cumberland.

Dr. F. H. Morison reports that he has been instructed to draw up a complete antenatal scheme, and as a preliminary he gives statistical information to show that maternal mortality is higher in Cumberland than most counties, and has progressively increased both in the urban and rural districts during the last three quinquennia. Since the Housing (Rural Workers) Act, 1926, came into force, applications have been received for 94 dwellings, and sanctioned in 93. In the case of 14 the applications were withdrawn and, at the time of writing the report, £1403 had been paid in grants and £50 as a loan. Owing to the heavy incidence of diphtheria in the Brampton rural area immunisation was extensively carried out in 1926, and no cases of diphtheria were notified there in 1928. Notification of puerperal fever was not satisfactorily carried out. There were five notifications and six deaths, and five of the six fatal cases were unnotified. Dr. Morison also complains bitterly of the imperfect notification of tuberculosis. During the last three years 65 per cent., 61 per cent., and 65 per cent. of the deaths from tuberculosis were notified less than six months before deaths, or not notified at all. The accommodation for the two V.D. clinics at the Cumberland and Whitehaven hospitals is reported to be unsatisfactory in several respects.

Huntingdonshire.

Dr. C. B. Moss-Blundell reports that the towns have adequate supplies of good water, with the exception of Godmanchester, and that "the rest of the county derives its water from wells and ponds, all of which are 'shallow' and the water of which is grossly polluted." The water-supply of schools is similar to that of the area in which they are situated. No action has been taken to check pollution of rivers and streams, and very little action with regard to the adulteration of foods and drugs. There were ten cases of small-pox, all in the neighbourhood of Peterborough where this disease was prevalent. Isolation hospital accommodation is quite inadequate, and the whole situation requires revision. Of the 954 births registered 225 were notified by midwives, 3 by parents and handy women, 704 by doctors, and 22 by registrars only. There were 28 stillbirths, equivalent to 3·0 per cent. of the live births. The county health visitors and the district nurses visit expectant mothers but there are no antenatal clinics.

Rutland.

Dr. Christopher Rolleston reports that the village of Ketton, "the pride of Rutland," is to be invaded by large cement works, which, however, will employ 100 men and are not likely to pollute the atmosphere. Electrification and possibly industrialisation of the whole county is foreshadowed. Owing to the smallness of the figures the statistics fluctuate much from year to year. Rutland had the lowest still-birth-rate among the counties, Lancashire and Cheshire the highest. Over a period of years Rutland has a low maternal mortality, but during 1928 two deaths from sepsis in the Oakham R.D. gave a maternal mortality of 7·6, the highest among the English counties. Dr. Rolleston urges the establishment of antenatal centres. Of 11 illegitimate children three died, an infant mortality-rate of 272·7. The county council subsidises a considerable number of approved nursing associations. The schemes for dealing with tuberculosis and mental deficiency compare very favourably with those of other counties. The 30 new houses included 16 erected by local authorities and 9 subsidised houses by other enterprise. Dr. Rolleston thinks that the benefits of the Housing (Rural Workers) Act, 1926, are not sufficiently known. Nevertheless, during last year, grants were agreed to for nine houses and refused for four, so that as much progress has been made in Rutland as elsewhere. Three veterinary surgeons have inspected the dairy herds, and one cow was condemned for tuberculosis. In addition, the inspection of a herd, as the result of an outside complaint, resulted in the biological examination of the milk of seven individual cows, four of which contained tubercle bacilli.

Guernsey.

This isolated community has points of special interest to the epidemiologist. Thus, the cows are free from tubercle, and there ought to be no human tubercle from that source. The three deaths from non-pulmonary tubercle in 1928 were from meningitis (aged 2–5), from peritonitis (aged 5–15), and from tuberculosis of the kidney (aged 25–65), respectively. The two chief industries are the culture of fruit and vegetables and granite quarrying. If the ingestion of tuberculous milk in childhood (as some believe) prevents tuberculosis of the human type, Guernsey should be badly off but, on the other hand, it has to be considered that granite quarrying and cutting has a phthisigenic effect, that the fruit and vegetables are chiefly grown under glass (hardly a healthy form of gardening!), that Guernsey has its housing question, 23 "terribly insanitary houses" being demolished in 1928, and that persons stricken with consumption may take up their residence in Guernsey owing to its reputation as a health resort, and that all these causes may help to keep up the death-rate from pulmonary

tuberculosis, rather than the lack of immunisation by tuberculous milk. Dr. H. Draper Bishop reports that the cases of diphtheria were of a severe type, with a case fatality of about 10 per cent., and that most of the 18 cases of scarlet fever were also of a severe character. For many years previously scarlet fever had been practically unknown, with the exception of 1926, when a small outbreak occurred as the result of a fatal but unrecognised case being landed from a ship. An elderly man and his wife were notified as suffering from encephalitis lethargica and both died. Guernsey has had a law for the prevention of smoke since 1858. Recently the smoke nuisance has been increasing. A successful prosecution was undertaken against one firm in 1928, and as a result all the firms are installing appliances to prevent smoke. Better methods for the collection and disposal of refuse are under consideration. Dr. Bishop suggests that a scheme should be devised to enable sufferers from cancer to be sent to England for radium treatment.

Fife.

Dr. G. Pratt Yule says the infant mortality-rates of the four county districts were: St. Andrews, 31; Dunfermline, 80; Cupar, 88; and Kirkcaldy, 93. Dunfermline and Kirkcaldy include coal-mining areas and were the most likely to be affected by the aftermath of the mining trade crisis of 1926. There was no death from typhoid fever in 1928 and only one in 1927, although this disease was formerly common in Fife. Dr. Yule attributes its decline to better water-supplies and improved conveniences. The tuberculosis scheme embraces 26 burghs and a population of over 200,000. The scheme is unusual in that there are no dispensaries, and the work is done by home visitation. During the year the notification of new cases has been satisfactory, and medical practitioners have coöperated cordially. Most of the new cases come from the smaller unhealthy dwellings. The accommodation at the V.D. centres at Kirkcaldy and Dundee has been improved, but the premises at the Dunfermline centre are "most unsuitable and inadequate." Centres have not hitherto been established for the M. & C.W. scheme. Dr. Yule points out that these will be necessary if progress is to be made in prenatal and postnatal work for mothers, and in the care of pre-school children. The 13 child-birth deaths gave a mortality of 6·1 per thousand births, and in the three previous quinquennia the annual deaths were 14, 18, and 13 respectively. Efficient antenatal supervision, maternity beds for cases from unsuitable homes, and the early removal to hospital of cases with puerperal morbidity are given by Dr. Yule as some of the remedies for this high death-rate. Housing efforts in the Dunfermline and Kirkcaldy districts have hitherto been chiefly concerned with the mining areas, but Dr. Yule points out that much might be done profitably under the Rural Workers Act of 1926 for the improvement of the stone-built rural cottages, which are structurally substantial, but in their present condition hopelessly insanitary. The dairy cattle undergo veterinary inspection twice a year, and 42 cows with tuberculosis of the udder were discovered. Certified milk is produced at two farms, and Grade A (T.T.) at one.

Dumfries County.

Dr. John Ritchie renews his plea for hospital beds for puerperal fever. Two dairy farms were licensed for Certified milk and 12 for Grade A (T.T.). One licence was revoked, owing to the farmer refusing to remove from his herd 10 cows which had reacted to the tuberculin test during the summer. A clean milk competition attracted 22 entrants. The competition lasted from Feb. 15th to May 16th, and three surprise visits were paid to each competitor. At the end of each round a competitor was notified of his marks and the standard, high to begin with, improved during the competition. The county veterinary inspectors, Messrs. F. A. Davidson and G. A. Sangster, submit a very interesting report on milk production in the county. The district committees adopted by-laws in 1926, and since then the veterinary surgeons have been laying the foundations for improved methods and premises. There are 881 dairy farms housing 14,624 cows. Attention is drawn to a prevalent type of mastitis associated with a diplococcus. This type of the disease is of a chronic and mild nature, and unlike ordinary streptococcal mastitis the acidity of the milk from the affected quarter is low. Infectious abortion is reported to be on the increase and "probably as big a scourge to the dairy farmer as tuberculosis." The veterinary inspectors further state that the supply of milk from tubercle-free herds has been in excess of the demand for some time. Their experience leads them to emphasise two important factors in the maintenance of tubercle-free herds. First, it is practically impossible to maintain such a herd unless it is isolated from untested stock, either by natural barriers or double fencing; secondly, the incubation period may last months, so that a newly purchased cow may pass the test, be added to the herd, and subsequently develop tuberculosis. They, however, affirm their strong belief in the reliability of the tuberculin test.

SCHOOL MEDICAL SERVICE.

—	No. on roll.	Aver. E.S. attendance.	Routine inspections.	Special exams. and reinspections.	Percentage of defects.
Blackburn ..	16,433	14,189	4,526*	8,961	20·3
Smethwick ..	11,683	11,538	4,521	9,087	23·2

E.S. = Elementary school.

* With 1114 of 11 to 12 year groups equals 5640.

Blackburn.

THE report of Dr. V. T. Thierens, in succession to Dr. Holden, has coördination and continuity as its keynotes. The school medical officer and assistant are also medical officer of health and assistant, while the tuberculosis officer and the woman assistant medical officer also help in the school work. Record cards are transferred from the child welfare centre to the school medical service. For young children nursery classes have just been opened, whose main aim is to cultivate good habits in the widest sense. An important feature is the afternoon siesta, when for 45 minutes the babies sleep on bed rests which they fix up themselves. Milk and cocoa are supplied at a charge of a halfpenny a day, or in exceptional cases gratuitously. The medical inspection is carried through by frequent visits from the nurse, with whose help it is hoped to eliminate many of those minor defects which retard educational and physical progress in later life. Those who fear nervous or mental strain from sending babies to school should study a typical time-table which includes handkerchief inspection, nature chat, preparation for lunch, play and music, with sleep time in the afternoon. In Blackburn there are 1300 children under five attending school, and Dr. Thierens submits the need for extension and special class-rooms built on the open-air principle, with slipper-baths and gardening facilities.

During ordinary school life the children of Blackburn receive close medical attention, with an extra age-group for medical inspection at 11–12, and special supervision is exercised over the rheumatic children. The establishment of a rheumatic supervisory centre is suggested to link up the work of the school medical service, the after-care committee, and the certifying factory surgeon. For many of the defects left over on leaving school treatment is ensured by coöperation between the service and the juvenile employment committee. Mr. Duckworth, who serves the education committee as juvenile employment officer, gives 34 examples of untreated defects in about half of which his efforts secured attention. There is still the question of defects arising after school age, but the

decision to raise the leaving age to 15 will halve the gap before the care of the Insurance Acts is reached.

Smethwick.

Dr. Hugh Paul gives a thorough consideration to the influence of Vita glass. His experiments point to a definite increase in the hæmoglobin content of the blood of the children who worked in class-rooms so glazed, but their heights and weights showed no superiority, nor did educational tests detect any influence. In his opinion the experiments would not justify the education committee in reglazing all the old schools. Of the great value of sunshine in the open-air he is keenly aware; an open-air school on the Fors Estate site, to be ready for pupils by May, 1929, will compare favourably, he writes, with the best in the country. He puts in a plea for more open spaces for children to play in; the street playgrounds of the past are now unsafe and other spaces should be provided within easy reach of the home. One new recreation ground has been provided through the generosity of Messrs. Guest, Keen, and Nettlefold. Dr. Paul suggests that future housing schemes should set apart small areas for recreation purposes.

The education committee have no orthopædic scheme, nor any special school of their own, but Smethwick Cripples Union, a voluntary body, works in close harmony with the school medical service, which refers to it cases of crippling defect. The union employs an orthopædic surgeon, Mr. Wilson Stuart, and a full-time masseuse and orthopædic nurse, and their clinic is equipped with an ultra-violet installation. Children requiring in-patient treatment are sent to Northfield or Bromsgrove, where the most modern methods are available. Pulmonary tuberculosis is dealt with at the chest clinic, where 108 cases were under observation, though only one child was found definitely suffering from phthisis. The only note of regret in the report concerns the large amount of uncleanliness (9·9 per cent.) in the borough; in the year 1928 no child, Dr. Paul writes, ought to come to school dirty. The number of cleanliness examinations was increased from 32,000 in 1927 to 43,000 in 1928; it is, he remarks, primarily the duty of parents to keep their children clean, and in a town like Smethwick where they take more than an average interest in the medical inspections it is astonishing to find so many dirty children; 18 of the cases reported were in the secondary school. The trouble should yield to the influence of the nursery school which is hoped for, and which should also prevent the large percentage (26·4) of medical defects among school entrants.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 14TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 265; scarlet fever, 3157; diphtheria, 1749; enteric fever, 31; pneumonia, 985; puerperal fever, 57; puerperal pyrexia, 100; cerebro-spinal fever, 11; acute poliomyelitis, 8; acute polio-encephalitis, 2; encephalitis lethargica, 13; dysentery, 8; ophthalmia neonatorum, 87. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Dec. 17th–18th was as follows: Small-pox, 379 under treatment, 8 under observation (last week 353 and 15 respectively); scarlet fever, 2715; diphtheria, 2689; enteric fever, 54; measles, 546; whooping-cough, 122; puerperal fever, 19 (plus 8 babies); encephalitis lethargica, 123; poliomyelitis, 3; "other diseases," 11. At St. Margaret's Hospital there were 13 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 27 (13) from measles, 8 (2) from scarlet fever, 19 (1) from whooping-cough, 57(16) from diphtheria, 54 (12) from diarrhœa and enteritis under two years, and 44(3) from influenza. The figures in parentheses are those for London itself.

The death from enteric fever outside London was reported from Chesterfield. Wigan reported 4 deaths from measles, Stoke-on-Trent 3. Three deaths from whooping-cough were reported each from Birmingham, Leeds, and Sheffield Diphtheria claimed 4 deaths in Hull; diarrhœa 6 deaths in Liverpool, and 3 each in Nottingham, Manchester, and Salford. Influenza claimed 5 deaths in Sheffield.

The number of stillbirths notified during the week was 227 (corresponding to a rate of 38 per 1000 births), including 32 in London.

Correspondence.

"Audi alteram partem."

THE APPROACHING CHANGES IN THE HOSPITAL SYSTEM IN THIS COUNTRY.

To the Editor of THE LANCET.

SIR,—The inadequacy of the provision for institutional treatment of the injured and sick of the working classes has been a sad spectacle in this country ever since the means at the disposal of doctors for better treatment became appreciable. It has been reported that there are 5000 potential patients on the waiting-list for admission into the Royal Infirmary, Edinburgh, an institution that meets, and is expected to meet, the needs of only a small section of the population. The disparity between the capacity of such hospitals and the needs of the people has rapidly increased, is still on the increase, and, indeed, is likely to increase further, and at a greater speed. Treatment of fractures, for example, was, even 30 years ago, in the main domiciliary, and that for pneumonia and typhoid was also the same; to-day each of these conditions needs the facilities of an adequately equipped institution to provide the advantages to which it is now realised every patient is entitled. In former days the charity hospitals, as I will term them here, did all they could to meet the needs of the poor, and the medical profession responded by giving their services on conditions acceptable and honourable to all concerned. The chief hospitals, maintained on a charity basis, have medical schools which are the pride of the country. The subsidiary ones have served the community and the doctors in a way that is reflected in each locality. Of late years it has been thought desirable to re-christen all these hospitals—those with and without medical schools—"voluntary" in replacement of the time-honoured "charity." The motive for that change in name is not apparent; but it in no way disguises the real nature of the hospitals, but only gives a pretence where none is necessary. Unfortunately, it has been impressed upon the public that these hospitals, whether with and without medical schools, are incomparably superior to others in this country and outside it. The directions in which they once occupied that proud position were especially: in being spaciously constructed and staffed competently by nurses. But the world has caught us up in these and many other directions and our hospitals have been outstripped.

Our machinery for providing institutional treatment for the workman under the Insurance Act is dependent upon charity, with a recent addition on the pseudo-provident system worthily supported by many working men and women. Owing to a stationary state in medicine there was until recent years no greater need for institutional treatment than could be met by the large charity hospitals, because the technical means for the care of accidents and of disease were not then as fully appreciated as they are at present.

But to-day, under totally new circumstances and conditions, the technical treatment of accidents and diseases demands a great increase in the facilities for institutional treatment. Charity and pseudo-provident schemes in these times are totally inadequate for such a purpose. The hospitals, with medical schools attached, need to be greatly increased in numbers rather than in size if medical education is to be promoted as it should be and has been until recent years in this country. Book-learning is excellent, but without technical training it is next to useless and often dangerous. As a direct consequence of the policy, or rather lack of a policy, of the General Medical Council in regard to the education and training of the doctor a young man is qualified by an examining body registered by the State to practise medicine in all its branches when he has often had insufficient clinical experience.

Not only is the young doctor inadequately trained for the professional work in front of him but there is, in this country, no separate hospital provision for the training of physicians, of surgeons, of obstetricians, and other specialists to prepare the best graduates for the higher work they should undertake. Indeed, these exceptional men are now neglected, and their neglect will assuredly react to the detriment of the science and art of medicine.

The system for the poor-law hospitals or infirmaries, still in being, was originally planned to provide institutions for the treatment of the working people throughout the country, and an adequate machinery was created for the purpose. But in consequence of the rapid development of industrial prosperity during the nineteenth century the charity hospital was considered more in keeping with the sentiments of the age. Quickly hospitals, supported by the charitable, made their appearance throughout the country in growing centres of population. Recently these hospitals have been in great part brought under the support of a pseudo-provident system which the working men have evolved to a remarkable degree of perfection. Charity has, therefore, been assisted by a pseudo rather than a true provident system, with the approval of the working men. The hospitals in existence to-day, then, are the charity hospitals with and without medical schools attached, and these are regarded as the proper institutions for the working-classes. Unfortunately they are not large nor numerous enough to meet the needs of those classes in the community. Besides there are the hospitals under the poor-law, which have of recent years been greatly extended, to serve the dense populations of the big cities and towns. The last far outnumber the first group and all together fall far below the needs of the community since the progress that has been made in medical science during the last 50 years.

Especially more hospitals with medical schools for the technical training of young doctors are urgently needed; also more for the institutional treatment of the working men and their families; and, at the moment, more urgent still is the need for hospitals in which future physicians, surgeons, obstetricians, and other specialists can be adequately trained. Although no coherent scheme has been put forward for meeting the hospital needs of the present nor of the future, the situation fortunately is in a plastic state. The great hospitals with medical schools attached are appealing to charity so that medical education may be properly upheld in this great and wealthy country, and on the score that such hospitals will be at the service of the community as well as that of medical education. These great hospitals should, in my opinion, not be at the service of the ordinary patient but only at the service of the extra-ordinary, certified as such by the members of the medical profession. They indeed are worthy of being placed on a pedestal which will ensure the most careful investigation of the diseased states of a person and where every remedy shall be tested as to its merits. They should be enhanced in their position rather than be kept under or reduced to the level of those in which the recognised means of diagnosis and treatment of the day are duly and properly carried out. Indeed, they should be super hospitals if they are to attain the highest aim in front of medicine. Super hospitals properly and adequately run the country sorely needs—ordinary hospitals it must have and in adequate numbers here, there, and everywhere. Charity hospitals might continue to exist alongside public hospitals for all who care to avail themselves of them, but not under the guise that they might be sufficient to meet the needs of the people. Such is the selection that confronts us, and where is the organisation to consider it? None exists. The Royal Colleges of Physicians and Surgeons are absorbed in examining; the General Medical Council appears to me to fail to grasp the real qualifications needed by a young doctor, and it is compelled to spend much of its time in protecting the public against the doctor who will not abide by the ordinary rules of practice, and it was unfortunate that when a few years ago a Ministry of Health was constituted its amalgamation with the Local Government Board produced a mongrel of but little value either to local government or to public health. A change is imperative, and it may be that now the Ministry of Health will, in turn, split itself and give birth to disparate twins, a new local government service and a public health department in control solely of the medical services.

What is needed above all things is, I believe, a board of medical men, acquainted with the various aspects of medicine, to organise a new hospital service for the country, to regularise the existing institutions, to arrange for the provision of sufficient hospitals for adequate technical training of young doctors: to train young doctors of exceptional ability and promise to acquire further knowledge and extensive practice in medicine, in surgery, in midwifery, and in all special branches so that there may be a proper succession of well-trained doctors to fill the many offices that become vacant in the hospital services throughout the country. As changes are impending, now is the time to draw attention to the actual state of affairs. I am, Sir, yours faithfully,

Cambridge, Dec. 18th, 1929. JOSEPH GRIFFITHS.

MUTILATING OPERATIONS.

To the Editor of THE LANCET.

SIR,—On p. 1338 of your last issue an excellent report is given of the admirable speech made in the House of Commons by the Duchess of Atholl on the subject of mutilating operations performed, ritually, upon women and girls in certain of our Colonies or Dependencies. I do not propose to comment further upon this speech, but I am impelled to say something, with your permission, concerning mutilating operations performed, in this country, upon boys and young women. For some years past I have noticed, as many must do, the very obvious evidence of the gross mutilation that is inflicted upon young male children under the plea of circumcision as a necessary operation. (I firmly believe that the circumcision of male infants is seldom, if ever, necessary, for the defect is not so much in preputial redundance as in penile insignificance, a fault that is usually remedied in a few weeks or months by natural growth.) Nor is there any reason why the so-called adhesions which so often form the excuse for the operation should not be broken down by a little manipulation, or the judicious use of a lubricated director. This is not, however, my point. I refer rather to the effects of the operation in producing a state, literally, of gross mutilation, by the time the unfortunate boy, or youth, has reached puberty.

To what extent the gross mutilation that is the frequent result of the careless performance of circumcision in early infancy interferes directly with due performance of sexual function I cannot say. But no physician, who being interested in the

psychological aspect of disease, yet cares to examine his patients physically, can help being impressed with the fact that, of those men consulting him on account of sexual neuroses, or neuroses and psychoses with a sexual basis, a very large proportion are found to be the subject of deformity—I can call it nothing less—due to circumcision. Those of us who accept the teachings of Adler are of course able to explain the neurosis as being determined, very largely, by the presence of an "organ-inferiority," and one forsooth the result of an unprovoked and unwarrantable trauma. Indeed, one is impelled to consider the effect, in provoking racial neurosis, of racial and *ritual* male circumcision!

So much for one kind of sexual mutilation, practised amongst Gentiles, ostensibly for medical reasons, but certainly in offensive ignorance of psychological teachings. It so happens that, within the last two years, I have come across evidence of what seems to be an increasing practice, certainly in America, and perhaps in England. It is this. Certain mothers (of a type familiar to us all), who allow their daughters little independence in thought or deed, will take these unfortunate girls, shortly before marriage, to doctors—usually women doctors—to see "if all is right." The daughters about to be married, thus brought to the doctors, are almost certain to display spasm on examination—every psychologist knows why—and, to judge by the facts brought to my notice, the doctor is as certain to say that "something should be done," and to proceed to do it. What is done is usually the snipping away of the hymen, sometimes vaginal dilatation, and, less frequently, incision or stretching under an anæsthetic is carried out. (I say nothing about the "operations" performed *after* an infructuous honeymoon, when nothing more than hysterical vaginismus is really present.) In more than one case the "snipping" and so forth has been clumsily performed, and sometimes the "stretching" involves an almost permanent laxity. But the psychological damage done far outweighs even the physical, and one has even wondered to what extent the unconscious determining factor in the mind of the "operator" has not been one very suitable for analysis! At any rate, I assert this, that in every case known to me in which this "pre-marital rite"—I quote the phrase used in the House of Commons—has been carried out, the result has been post-marital disaster.

If you will allow me, Sir, to consider the leading article of capital importance that appeared in your columns on Nov. 2nd (p. 934) concerning the position of psycho-analysis, as having reference to psychological methods *generally*, I will say that such facts as I have narrated reinforce, in the strongest way, your plea for an end to the conspiracy of silence that obtains, in respect of psychological science, amongst the teachers of academic medicine. It is time to say that no man has a right to call himself, or practise as, *physician* unless he has at least as much acquaintance with the theories and methods of Freud, Jung, and Adler, as he has with those of Koch, Lister, and Pasteur. I confess that it seems to me not much better to strip a baby boy's penis or to cut away a bride's hymen "under strict antiseptic precautions" in London, than to do the same sort of thing in Africa with a flint knife. The psychological motives and the psychological results are, if anything, more deplorable in the former case than in the latter.

I am, Sir, yours faithfully,

F. G. CROOKSHANK.

Wimpole-street, W., Dec. 20th, 1929.

NELSON'S FATAL WOUND.

To the Editor of THE LANCET.

SIR,—A very interesting statement describing Nelson's fatal wound "written and signed by Surgeon William Beatty," who attended Nelson on board the *Victory* at Trafalgar was published rather more than twenty years ago in THE LANCET (1906, i., 68) "through the courtesy of Mr. Dudley Brown, of Woodside, Surrey," who had "found the original document among some old papers." An explanatory note stated that:

". . . Surgeon William Beatty's 'Authentic narrative of the death of Lord Nelson, with the circumstances preceding the Happening and subsequent to that Event' was published with a 'Provisionary report of his Lordship's wound' and certain anecdotes immediately after the tragic occurrence, and the note that we now (1906) publish was probably penned for his own use as an immediate memorandum. It bears the shape of a letter but it is not addressed to anyone. . . ."

The origin of this "letter" can now be explained; for it is copied out in full in a commonplace book of Sir Astley Cooper's, which has recently been found, with a number of other MSS., at the Royal College of Surgeons. The copy is entered in the book under the heading "gun shot wound that killed Lord Nelson." But between this heading and the "statement" the following letter is copied:—

"His Majesty's Ship *Victory*. Dover Roads. 15 Decr.

SIR,—Conceiving that a true statement of the nature of the Wound which deprived the British Nation of its unrivalled Hero, the late illustrious Lord Nelson, may be acceptable to you, I take the liberty of enclosing as correct a one as the nature of existing circumstances enabled me to ascertain: And embrace this opportunity of acknowledging myself much obliged for the Professional instruction received at different periods from Mr. Cline and you.

I am, Sir, with much respect,

Your obliged Servant,

W. BEATTY, surgeon."

The fact that this letter was copied without comment into Cooper's commonplace book implies convincingly that the original was addressed to Cooper, although there is no direct evidence of this. The reference in the letter to "instruction received from Mr. Cline and you" further strengthens this inference. For Cooper began to assist Cline, whose pupil he was, at St. Thomas's Hospital in 1789, and it was not till 1800 that he abjured Cline's democratic politics to gain the surgeoncy at Guy's. Beatty may well have studied under Cline and Cooper, for according to the Dictionary of National Biography he "entered the service of the Navy at an early age, and saw much service in it in various districts of the globe," while in 1806—that is, within a year of Trafalgar—"he was appointed physician to the Greenwich Hospital, an office which he retained till 1840."

The copy of Beatty's statement in the commonplace book follows word for word that published in 1906, with only a very few variations of spelling and punctuation. While the statement may of course have been in the first instance "penned for his own use an as immediate memorandum," it is now established that it was sent in a letter addressed, presumably, to Astley Cooper.

I am, Sir, yours faithfully,

W. R. LE FANU,

Assistant Librarian, Royal College of Surgeons of England.

Dec. 23rd, 1929.

ON his retirement from the medical officership of health for the County of Devon after 21 years' service, Dr. George Adkins has received many tokens of appreciation from his colleagues in the county health service. His successor is Dr. L. M. Davies, County M.O.H. for Northamptonshire.

JOHANNESBURG GENERAL HOSPITAL.—The new Mining Block is on the point of completion, and it is claimed that this will then be the largest hospital, under the control of a single head, in the British Empire. Under the new Hospital Ordinance the Provincial Administration will grant a subsidy of 30*s.* for every £1 of voluntary contributions. The estimated expenditure for this year is £208,000.

Obituary.

SIR WILLIAM MILLIGAN, M.D., LL.D. ABERD.

WE regret to announce the death of Sir William Milligan in Manchester on Dec. 19th at the age of 65. The career thus closed was conspicuously successful in many directions, for he leaves a lasting mark on his specialty and will be remembered as an aural surgeon of outstanding experience and ability and as a notable figure in the public life of his city.

William Milligan was the second of several distinguished sons of the late Very Rev. Prof. William Milligan, of Aberdeen University. He was educated at Old Aberdeen Gymnasium, a school once well known but now no longer in existence, and at Aberdeen University where he graduated M.B. with honours in 1886, and M.D. with highest honours in 1892. Having served as senior demonstrator of anatomy at Aberdeen, he went as house physician to the Northern Hospital, Liverpool, and then pursued post-graduate studies at Göttingen and Vienna before settling in Manchester as an aural surgeon. At first he was attached as honorary surgeon to the Manchester Ear Hospital, and later he was appointed aural surgeon to the Royal Infirmary, from whose active staff he retired about four years ago on reaching the age-limit. He was lecturer on diseases of ear and also, after some years, when the two appointments were combined, on diseases of the throat, at Manchester University. Other appointments which he held were those of consulting laryngologist to the Christie (Cancer) Hospital and surgeon-laryngologist to the Manchester Radium Institute. This last institution owed much to Milligan's keenness and business ability; he acted as honorary secretary to the committee which, in 1913–14, raised a very large sum of money for the provision of radium for Manchester and district, and he was honorary secretary and treasurer of the Institute as well as being a member of its surgical staff from its foundation.

SIR WILLIAM MILLIGAN.
[Photo by Lafayette.

Sir William Milligan was president of the Manchester Medical, Clinical, and Pathological Societies, in turn; he was a prominent figure in and president of the old British Otological, Laryngological, and Rhinological Association, and, when it amalgamated as part of the Royal Society of Medicine, he was in succession, at an interval of some years, president of the Otological Section, and of the Laryngological Section. He was also president of that eclectic body, the Visiting Association of Throat and Ear Surgeons of Great Britain, and an honorary member of the Austrian Otological Society. In 1911, with Dr. Wyatt Wingrave, he published his magnum opus, "A Handbook of Diseases of the Ear." The word "handbook" disguises the size of this volume, which is perhaps the most comprehensive work on the subject that has been published in the British Isles. The book was especially notable as emphasising the importance of coöperation between aural surgeon and clinical pathologist. A smaller work on the same lines, intended for students, and also written in collaboration with Dr. Wingrave, was published in 1922. Besides being a frequent contributor to medical journals he was formerly one of the editors of the *Journal of Laryngology, Rhinology, and Otology*, and in its leaner years that journal, now prosperous under a slightly different title, owed much to his interest and generosity.

Milligan's reputation as a consultant in otology and laryngology was founded on an enormous clinical experience wedded to native acumen and sound judgment. When he was at the zenith of his prowess the north of England was busier and more prosperous than it is to-day, and he had possibly a wider-ranging private practice than any aural surgeon in the country, being frequently called into consultation in London and abroad. It is difficult for a Londoner to realise the ascendency that Milligan held for many years in his specialty in the North and Midlands. To a man of his splendid physique hard work was the greatest pleasure, and often he would work for weeks at a time, from the early hours of one morning until the early hours of the next, operating at his nursing home and the hospital, seeing practitioners and patients, dictating letters and writing. He would see as many as 90 private patients in a day, in addition to other work, with an apple at midday as the only break. In debate he was emphatic in his opinions, which were well marked on subjects of controversy. He was an ambitious man, of handsome and somewhat imperious aspect, and he did not suffer fools gladly; but he was kindness itself to his house surgeons and other juniors with their way to make, and often he took infinite trouble to make their path smoother. When at his very busiest he would travel many miles out into the country, not once but several times to attend the sick child of a country doctor.

Under Milligan, Manchester saw the treatment of diseases of the ear, nose and throat develop from syringing, spraying, and painting into the surgical specialties of to-day. As an operator he was probably seen at his best when performing the radical mastoid operation, in which he introduced a number of important modifications, such as his self-retaining retractor, his meatal flap, and his wide drainage-tube; to the student of aural surgery it was a breathless and dazzling entertainment to see him perform a mastoid operation at high speed, with a running flow of comment and explanation—hardly seeming to look what he was doing, but in reality aware to a millimetre of every movement. In otology his name will always be associated with the subject of tuberculous disease of the middle ear, on which he was one of the earliest and most earnest investigators, and with the surgery of affections of the labyrinth, on which he wrote exhaustively from a large experience. But although it was as an aural surgeon that he was most universally known, he did not by any means neglect the other branches of oto-rhino-laryngology. He was one of the first in this country to take up œsophago-bronchoscopy, and early introduced modifications of Killian's tubes; his private collection of foreign bodies removed from the œsophagus and bronchi was enormous. Malignant disease of the nose and throat was another subject that attracted his special interest, and he was a pioneer and an enthusiast in the employment of radium in these conditions.

Milligan was not only a distinguished aural surgeon, as well known in London as in Manchester, and the author of a standard text-book on his specialty, but he was prominent in the public life of Manchester. He was knighted in 1914, and when the war broke out he was attached to the 2nd Western General Hospital (T.F.), where with Colonel Westmacott, he had charge of the many cases which passed through the institution. Later he was appointed consulting aural surgeon for the north-west area under the Ministry

of Pensions. For many years he had been keenly interested in politics, and after the war he twice stood as a Parliamentary candidate in the Liberal interest, but without success.

Sir William Milligan was fortunate in his home life, and his large family of brothers and sisters was a singularly united clan. He spent perhaps the happiest days of his life with a rod or a gun on his beautiful estate, Polmood, in Peeblesshire. Married, in 1890 to the daughter of Mr. James Anderson, of Liverpool, he leaves a son and a daughter.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

THE CHRISTMAS ADJOURNMENT.

THE House of Lords adjourned on Dec. 20th for the Christmas recess. They will reassemble on Jan. 21st. Among the Acts which received the Royal Assent before the adjournment was the Highlands and Islands (Medical Service) Additional Grant Act. The House of Commons adjourned on Christmas Eve.

THE MENTAL TREATMENT BILL CONSIDERED ON REPORT.

The Mental Treatment Bill was considered on Report in the House of Lords on Dec. 17th.

Power to Receive Voluntary Boarders.

On Clause 1 (which gives power to receive voluntary boarders) Earl RUSSELL moved an amendment, which was agreed to, reducing the age at which persons could be received as voluntary boarders at the request of their parents or guardians from 18 to 16. Another amendment was agreed to omitting the word "unmarried," Earl Russell explaining that with the reduction of the age those words were unnecessary, because now by law young people could not be married under 16. These amendments would meet objections raised during the Committee stage.

Lord DANESFORT moved a new subsection to ensure that a young person should not be sent to an institution on a doctor's recommendation which was old or out of date. It was, he said, founded on the analogy of Clause 5 (5) which made provision for putting a man into a place of mental treatment if he was incapable of volition. The recommendation of the doctor under Clause 1 of the Bill had to state that the person was likely to benefit from treatment for mental disorder. That might be true at or very shortly after the time when the person was examined, but if the recommendation were used a month or two after the examination the statement might be quite untrue, because the patient might have recovered, and possibly might no longer be likely to benefit by being put in a place for mental treatment. Therefore his proposal was that the medical recommendation should cease to have effect at the expiration of 14 days from the last date of examination.

Earl RUSSELL said that the amendment was perfectly proper. The object was to avoid a stale recommendation. He would accept the amendment if it could be moved in the following form:—

4. "The medical recommendation shall cease to have effect for the purposes of this section on the expiration of fourteen days from the last date on which the person to whom the recommendation relates was examined by the medical practitioner for the purposes of making the recommendation."

Lord DANESFORT agreed to the alteration and the amendment was carried.

A drafting amendment moved by Earl RUSSELL, to omit the words "superintendent or other person in charge, or to the person with whom he is residing in single care," and to substitute "person in charge," was agreed to.

Persons Incapable of Volition.

Clause 2 deals with notice of reception, death, and departure of voluntary boarders, and makes provisions as to boarders who become incapable of volition.

On the motion of Earl RUSSELL, a new Subsection (4) was agreed to, providing that if a voluntary boarder under 16 ceased to have any parent or guardian, or if his parents or guardians were incapable of performing, or refused or persistently neglected to perform their duty as such, the person in charge should report the circumstances of the case and the condition of the boarder to the Board of Control and the Board should consider the report and give such directions as they thought fit.

Clause 5 makes provision for treatment without certification of persons temporarily incapable of volition.

Earl RUSSELL moved to amend Subsection 3 so as to provide that an application should be accompanied by a recommendation signed by two registered medical practitioners of whom one should be a medical practitioner (not being the usual medical attendant of the person to whom the application related) approved by the Board of Control for the purpose of making recommendations under this section, and the other should be, if practicable, the usual medical attendant of the person to whom the application related.

The Earl of ONSLOW said that as originally drafted the Bill said that it should be the family doctor, or if not then a person approved by the Board. In the event of there being no family doctor would two doctors be approved by the Board?

Earl RUSSELL said that the clause would read that it should be a medical practitioner approved by the Board, and if practicable a family doctor. If there was no family doctor it would be any doctor that could be obtained.

Lord MERRIVALE said that Earl Russell was justified in what he was doing. He had been very much surprised on the previous day, among various communications from medical men, to receive one from a medical man with, he supposed, as large a private practice as there was in relation to matters of unsound mind and defective mentality, endorsing insistence that there should be some additional safeguard. He hoped that this additional safeguard would be agreed to.

The amendment was agreed to.

On the motion of Earl RUSSELL another new Subsection (12) was agreed to as follows:—

"A person received as a temporary patient shall not be detained as such for more than 28 days after the date at which he regains volition, unless in the meantime he again becomes incapable of volition."

He explained that this gave effect to Lord Cranbrook's proposal that a temporary patient should be discharged 28 days after recovering volition unless he relapsed in the meantime. The effect would be to give him more avenues of discharge than any other patient.

Power to Make Rules.

Considerable discussion took place on Clause 15, which gives power to make rules.

Earl RUSSELL moved in a different form a new subsection which had been accepted in Committee, providing that rules made, under section 338 of the principal Act, after Jan. 1st, 1931, should be laid before both Houses of Parliament, and if within 21 days an address was presented to His Majesty by either House praying that a rule should be annulled it should be void.

On the suggestion of Viscount BRENTFORD the date of Jan. 1st, 1931, was omitted, the noble Lord pointing out that power to make rules began long before the Act otherwise came into operation.

Viscount BRENTFORD then moved a further amendment to the new subsection providing that the rules which not only the Ministry of Health but, under other clauses, the Board of Control were empowered to make, should not come into force where they modified or adapted this measure or any other enactment until the rule had been approved by each House of Parliament. He urged that if there was to be any change made in this legislation it should be done only by Parliament. In the subsection power was given to the department to make rules which would alter this Bill.

Earl RUSSELL pointed out that the rule-making power which the subsection proposed would not enable them to alter the Bill. The rules, apart from the administrative rules, which would not come under Viscount Brentford's amendment, would not make new laws. They would be the most trifling adaptations of an old Act to new circumstances, and would in no sense alter anything that Parliament had agreed to. He hoped the House would not insist on the amendment.

After further discussion, Earl RUSSELL suggested that the matter should stand over till the third reading for further consideration and consultation.

Viscount Brentford's amendment to the subsection was agreed to.

The report stage of the Bill was concluded.

The Third Reading.

On Dec. 19th the Bill was read the third time.

On Clause 2 (notice of reception, death and departure of voluntary boarders, and provisions as to boarders who become incapable of volition),

Earl RUSSELL moved to omit from subsection (3) the words "in the opinion of the medical superintendent or such other person as aforesaid." These words, he said, were inserted at the instance of Lord SANDHURST on the committee stage, but they were found to be inappropriate to the Bill. The question of whether a patient was capable of volition or not was a question of fact, and it had to be

ascertained, and was naturally founded on the opinions of the people who had observed it.

The amendment was agreed to and the Bill was passed.

SCOTTISH HEALTH VOTE.

On Dec. 16th the House of Commons went into Committee on a supplementary estimate of £10,650 for the Scottish Department of Health, including grants in aid of the Highlands and Islands Medical Service. The estimate was agreed to. The report stage of the same estimate was agreed to on the 17th.

HOSPITALS AND MOTOR ACCIDENTS.

On Dec. 18th the House of Commons went into Committee on the Road Traffic Bill, the Earl of DONOUGHMORE, Chairman of Committees, in the chair.

Third Party Insurance.

On Clause 34 (requirements in respect of policies for third party insurance),

Lord LUKE moved an amendment to provide that a third party risk insurance policy should ensure to any hospital treating any bodily injury caused by a motor accident payment of the cost of such treatment up to a maximum payment of £25. He said that in 1927 the hospitals of the provinces treated 26,000 in-patients and 39,000 out-patients in their wards as a result of motor accidents. The cost to those hospitals was approximately £230,000. The actual money received from insurance offices and patients was £26,000, so that to the extent of eight-ninths of the cases the hospitals bore the expense. If these cases were divided over all the hospitals of the kingdom evenly, probably it would not be so unfortunate for the few hospitals which now received these cases in excess—the hospitals near to the great trunk roads. All good motorists would pick up an injured person and take him to the nearest hospital, but the cure was usually at the expense of that hospital, and the hospitals were continually saying that these casualties from the roads were using the beds that had been provided for meeting local hospital needs. The maximum payment which he proposed was based on £4 per week for six weeks. That £4 was supposed to cover the out-of-pocket expenses of a hospital treating such a case, and the figures he had quoted would show that the average expense would not be greater than about £4. If such a risk were added to the present risk in anyone's policy the insurance offices said that the cost would only be about 1*s.* or 2*s.* additional. It seemed only reasonable that hospitals should have this first charge on the insurance, because if the hospitals were not handy to deal with these motor accidents motorists would be placed in a very difficult position.

Viscount KNUTSFORD said of cource this amendment would not deal with all the accident cases brought to hospitals through motor accidents, but only with those where a person was insured against third-party risks, and where the accident was due to his negligence. It seemed really unfair that if a man was injured in an accident and was taken to a nursing home and treated by a doctor the insurer should pay the expenses as a liability in consequence of his negligence, but that if the same patient was taken to a hospital the insurer was not liable, because the hospital had no legal claim to recover the costs incurred by it. In fact the insurance company might refuse to pay, as it was not a legal liability, and they would be justified from the point of view of their shareholders. Although the treatment of these cases had increased enormously, and although this was a very serious burden on the hospitals, they made no complaint. They were only too glad to help injured people, but they did think that the present position was very unfair. He was sure that the amendment was a fair one.

Lord SOMERLEYTON, as one who had been connected for over thirty years with three central funds—the Saturday Fund, the Sunday Fund, and King Edward's Hospital Fund—said he desired to support the amendment.

Viscount BERTIE of THAME moved an amendment to the amendment to the effect that any surgeon or medical practitioner rendering first-aid in a motor accident should have a claim under the policy. He said that one often read in the press letters from doctors who lived nearby the scenes of frequent accidents stating that they were scandalously treated by persons who not only did not pay them but who went away with articles which had been lent to them and did not return them.

Lord STANLEY of ALDERLEY supported the amendment, but not the amendment to the amendment. He said that if the injured person were taken to a medical practitioner the claim of that medical practitioner would be part of the damages to be paid by the motorist and would be a proper claim against the insurance company. But that was not the case in regard to hospitals, he understood. Hospitals were voluntary associations, and as such could not institute an action or make any legal claim against the injured person, or against the person who caused the injury. If they were to deal voluntarily in future with motor casualties he thought that some of the small hospitals might find even greater difficulty in carrying on than at present.

Lord ATKIN said that it might be that there were insuperable difficulties in a hospital making a charge against a person who came for attention and who was treated by them, but he did not know what those difficulties were in law. He saw no reason why a hospital should not say that they would make a charge for any person who came to them who was injured in a motor accident, and that they would remit that charge if in fact it was not covered by insurance. If that were done the object of the amendment would be covered. If there were insuperable difficulties the real remedy was to make some such provision as that any person who had been injured by the negligence of a motorist should be entitled as part of his damages to recover a reasonable sum, not exceeding £25, which he might have paid, whether legally liable or not, to a hospital for treatment of his injuries. That would enable him to recover from the insurance company. He doubted whether that would mean any extra premium, because medical attention was always one of the elements in the damages which an insurance company laid themselves out to pay. The form of provision contained in the amendment would be very difficult to enforce.

Lord DANESFORT supported the amendment. The point raised by Lord Atkin was a good technical point, but was only technical. All that would be necessary would be to change the form of the amendment to meet it.

Lord EBBISHAM, in supporting the amendment, said that he had some experience in connexion with four small hospitals in Surrey. They found that in the last completed year an expenditure had been made for patients injured by motor-cars, but resident outside their locality, of at least £2000. A great injustice was being done to hospitals throughout the country.

The Government's Reply.

Earl RUSSELL, replying for the Government, said that he was aware of the grievance of the hospitals in this matter. It had become much more acute in the last two or three years. But this particular amendment in this particular part of the Bill was not the way to remedy the grievance. It would be inconsistent with the general scheme of insurance in Part II. of the Bill and it would not be by any means the best way to do it. It would not include all cases. There seemed to be in their lordships' House a practically unanimous feeling that something of this sort should be done. He suggested that the proper course would be to draft a separate clause which would provide in one way or other, not for the insurance only of some persons who were injured, but for the insurance of all persons who were injured—at any rate of all motorists. If Lord Luke and Lord Knutsford would confer with him and his advisers before the Report stage he would see if a separate clause could be drafted to meet the case. There was only one word of warning he would utter for the consideration of those interested in hospitals. If once a hospital began to receive contributions from any source in a manner which was not voluntary it seemed to him that it would be altering its character in a way which might be embarrassing and which might in the end, if the income from that source was considerable, expose it to some form of public management.

Viscount BRENTFORD, speaking on behalf of the British Hospitals Association, said he hoped that Earl Russell would approach this matter from the point of view of Lord Luke's amendment and not from the point of view of an imposition of a certain sum per head on motorists to raise a fund. What was needed was to enable the hospitals to do what the ordinary doctor or the ordinary nursing home could do.

Earl RUSSELL said that he proposed to consider the matter with a perfectly open mind and to consider any suggestions from those able to make them with a view to producing the best agreed clause, if one could be drawn.

Viscount CECIL of CHELWOOD said that the grievance would not be dealt with by approaching it in the manner proposed.

Viscount BRENTFORD: Why?

Viscount CECIL: Because the beds are actually filled. That was the real point. Country doctors would tell them pitiful stories of how the poor were utterly unable to get hospital treatment because the hospitals were absolutely filled with motorists at a certain period of the year.

Replying to Viscount BERTIE, Earl RUSSELL said that he thought that doctors who rendered assistance to these cases were protected, if they were entitled to sue.

The amendment and the amendment to it were both withdrawn.

The Bill passed through Committee.

THE NATIONAL RADIUM FUND.

On Dec. 19th, on the motion for the Second Reading of the Consolidated Fund (No. 1) Bill,

Sir KINGSLEY WOOD said he wished to deal with a matter which had aroused a considerable amount of interest not only in the House, but outside, in relation to a considerable sum of money raised for the National Radium Fund. A large number of people had looked with the greatest hope and many of them with a good deal of anxiety to the use to which that fund would be put. He (Sir Kingsley Wood) was not questioning the belief that a great deal of good might be accomplished by the use of this large sum of money. He supposed that cancer was one of the most terrible diseases that afflicted mankind. The use of radium in the treatment of cancer, at any rate in its early stages, was one of the most hopeful methods. This considerable sum of money had been vested in the hands of specially constituted trustees who had been very carefully chosen. He had not seen a word of criticism in relation to the men who were serving as trustees of the fund. He admitted at once in putting the question as to what had been done and what purchases of radium had been made that there was very great difficulty in relation to the purchase of radium in this country at the present time. He understood that the only place to which the trustees could go to purchase radium was the Belgian Congo. That raised a very important point of view as to the outlook of the trustees. He agreed that unless they were very careful they might very well be held up and have to pay a very high price for radium.

Mr. KELLY: Why not go to Canada?

Sir KINGSLEY WOOD said that that was one of the difficulties of the position. It was stated in the report upon which this question was largely founded that attempts were being made to find radium in other countries in the world and hopes were held out that radium might be found in the British Dominions. He thought there could be nothing finer for mankind, especially mankind suffering from a terrible disease like cancer, if it was possible to find radium in any other country than the one he had mentioned. He would like to know how much money had been expended in the purchase of radium in this country and whether it had been possible to obtain radium in any of the Dominions or any foreign country other than the Belgian Congo.

Miss SUSAN LAWRENCE (Parliamentary Secretary to the Ministry of Health) said that she could not reply at any length on this question. The Radium Trustees were not appointed by the Ministry of Health but by Royal Charter. Therefore, the Ministry of Health was not responsible for the work of the Radium Commission in so direct a way. It was an independent body set up by Parliament and would present an annual statement and accounts in a short time. In reply to the specific questions put by Sir Kingsley Wood she might say that they had agreed to purchase 10 grammes of radium at 850 per milligramme from the Union Minerale of Belgium, and they had another 4 grammes already in their possession with option to purchase. All the radium had been purchased from the Belgian company.

The Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 18TH.

Overcrowding in Greater London.

Mr. MILLS asked the Minister of Health if his attention had been called to the decreasing sleeping accommodation to the acre in London by the destruction of dwelling-houses and their conversion into shops and factories; whether he was aware that in many areas of London the sleeping accommodation had reached the density of 90 to the acre; and what steps he proposed to take to stop this danger to the inhabitants of inner London.—Miss LAWRENCE (Parliamentary Secretary to the Ministry of Health) replied: The difficulties of housing the population of Greater London were considered by the Royal Commission on the Local Government of Greater London. The proper control of development in Greater London is a matter which is being considered by the Greater London Regional Committee. I may add that my right hon. friend hopes to introduce legislation extending town-planning powers to build up areas.

After-care of Mental and Physical Defectives in Scotland.

Dr. FORGAN asked the Secretary for Scotland the total amount of Government grants made last year to committees in Scotland concerned with the after-care of mental and physical defectives; the number of the committees among which this amount was divided; and the average sum received by each.—Mr. ADAMSON replied: The total amount of Government grants made last year to societies in Scotland assisting and supervising uncertified mental defectives was £750. Of this sum £600 was paid to a central association, with headquarters at Paisley, which operates through local care committees in various parts of Scotland, and £150 to a society in Edinburgh. Of the £600 grant to the central association a sum of £200 was allocated last year to 11 local care committees—an average of approximately £18 each.

THURSDAY, DEC. 19TH.

Health Insurance Administration.

Mr. LLEWELLYN-JONES asked the Minister of Health whether he would furnish a list of advisory or other committees set up by the Ministry of Health in connexion with the administration of national health insurance or of public health generally since the commencement of 1925; and whether he would indicate on which of these committees provision had been made for the inclusion of members from Wales, including Monmouthshire, and the number of such members on each committee.—Mr. GREENWOOD replied: I am not in a position to reply specifically to the second part of the question, since I am advised that in many instances it has not been considered relevant to the object for which the committee was set up to inquire whether all or any of the members could be considered to belong to particular parts of Great Britain. The following is the list of committees set up by the Ministry of Health in connexion with the administration of national health insurance or public health generally since the commencement of the year 1925:—

Committee on Post-Graduate Medical Education; Committee on Vaccination; Dental Benefit Joint Committee—which has now been replaced by the Dental Benefit Council; Advisory Committee under Therapeutic Substances Act, 1925; Medical Advisory Committee on Decennial Revision of International List of Causes of Death; Committee on the Optical Practitioners (Registration) Bill; Advisory Committee under Article 41 of Medical Benefit Regulations, 1928; Committee on Ethyl Petrol; Committee on Training and Employment of Midwives; Committee on Maternal Mortality; Pharmaceutical Distribution Committee under Article 25 of Medical Benefit Regulations, 1928; Joint Advisory Committee on Pollution of Rivers and Streams; Advisory Committee on the Definition of Drugs for the Purposes of Medical Benefit under the National Health Insurance Acts.

Nursery Schools.

Mr. DAY asked the President of the Board of Education how many new nursery schools had been approved by the Board during the previous 12 months.—Sir CHARLES TREVELYAN replied: Fourteen new nursery schools have been approved by the Board since Nov. 1st, 1928.

Overcrowding of Public Mental Hospitals.

Mr. SORENSEN asked the Minister of Health what action he was taking to prevent the present overcrowding of public mental hospitals.—Mr. GREENWOOD replied: Though there is a shortage of accommodation in public mental hospitals, there are relatively few cases of serious overcrowding. The position has already received my attention. Approval has been given to certain proposals for extending mental hospital accommodation, and others are under consideration. It is anticipated that these extensions will largely meet the present shortage; and further alleviation of the position may result from the survey of institutional accommodation which may become available under the Local Government Act.

Care of Mentally Deficient Children.

Mr. SORENSEN asked the Minister of Health what action he was taking to provide suitable accommodation and care for the many cases of mentally deficient children who had been recommended for institutional treatment by mental deficiency committees but who were not receiving it.—Mr. GREENWOOD replied: I am aware of the existing inadequacy of institutional accommodation for mental defectives, both adults and juveniles, and local authorities are being urged to carry out their statutory duty to provide institutional accommodation.

Hours of Industrial Employment.

Lady CYNTHIA MOSLEY asked the Minister of Labour when she would introduce a Bill for the regulation of hours in industry.—Miss BONDFIELD replied: The Hours of Industrial Employment Bill is in course of preparation.

Replying to a further question by Mr. LOUIS SMITH, Mr. GREENWOOD said he hoped to introduce the Bill on an early day after the Christmas recess.

Inspection of Vivisection Experiments.

The Duchess of ATHOLL asked the Home Secretary the number of visits of inspection per annum paid on an average by the inspectors of experiments on living animals; and whether the dates of these visits were known beforehand to the persons conducting these experiments.—Mr. SHORT replied: During the five years 1924–28 inclusive, 3315 visits were made or an average of 663 per year. Of

the total, 146 (or an average of approximately 29 a year) visits were made by appointment for the special inspection of premises; for interviews with applicants for a licence; or for discussing with licensees questions arising out of their work under the Act. In all other instances (3169) the visits were made without previous notice.

Unsplintable Glass in Public Vehicles.

Commander SOUTHBY asked the Home Secretary whether he would consider taking steps to make it compulsory for all hackney carriages and other vehicles plying for hire to be fitted with unsplinterable glass.—Mr. SHORT replied: The jurisdiction of my right hon. friend in this matter is limited to London. He has considered it in consultation with the Commissioner of Police and he is afraid that it is not practicable at present to enforce the use of unsplinterable glass in public service vehicles generally on account of the cost, but the matter will not be lost sight of.

Medical News.

UNIVERSITY OF OXFORD.—At recent examinations the following candidates satisfied the examiners in the undermentioned subjects:—

Medicine, Surgery, and Obstetrics.—J. A. Brown, L. J. Clapham, C. M. Duncan, W. B. Fiddian-Green, J. K. Marshall, Q. St. L. Myles, R. S. B. Pearson, C. R. Salkeld, G. Secker Walker, W. B. Williams, Annie D. M. Adams, and Ruth Sandeman.

Pathology.—R. E. Adam, I. M. Bell, W. D. W. Brooks, G. H. Buck, J. M. Cribb, F. R. Crookes, Shelton Durham, N. A. Gillespie, Newton Heath, G. W. Hinchliff, J. E. Jenkins, H. de B. Kempthorne, G. B. Malone-Lee, J. H. Peel, W. S. Tegner, H. A. Treble, F. M. Trefusis, O. S. M. Williams, and Elspeth W. Smellie.

Forensic Medicine and Public Health.—H. H. Aitchison, Fairfax Bell, W. D. T. Brunyate, G. H. Buck, J. L. Clapham, C. M. Duncan, W. B. Fiddian-Green, C. R. Greene, Arthur Guirdham, Francis Hawking, W. H. McMenemey, J. K. Marshall, W. E. S. Merrett, R. D. Newton, J. N. O'Reilly, N. C. Parfit, R. S. B. Pearson, F. M. Trefusis, Amy C. E. Clarke, and Victoria M. Robinson.

UNIVERSITY OF CAMBRIDGE.—At recent examinations the following candidates were successful:—

M.CHIR.

F. J. Milward.

THIRD EXAMINATION FOR M.B. AND B.CHIR.

Part I., Surgery, Midwifery, and Gynæcology.—G. G. Allan, G. N. Bailey, G. O. Barber,* R. E. Barnsley, J. H. Bentley, R. M. Bolam, W. V. Bowman, A. D. D. Broughton, A. C. Crooke, A. M. Cunningham, H. Curtis, M. Ellis, R. B. Floyd, M. S. M. Fordham, I. J. Franklen-Evans, A. W. Franklin, A. S. Hall, P. E. T. Hancock, A. G. J. Harris, J. E. M. Harrison, F. T. J. Hobday, W. V. Howells, E. H. Hudson, C. G. Jobbins, M. M. StG. Johnstone, J. G. Jones, H. V. Knight, E. Landau, R. S. C. McDade, S. McDonald, A. P. McEldowney, R. W. Malim, C. E. P. Markby, R. A. Maynard, B. C. Nicholson, G. L. Ormerod, R. G. Orr, V. P. Paxon, J. O. Poynton, C. B. Prowse, T. G. Reah, G. H. Sanderson, J. E. Semple, R. H. B. Snow, G. H. G. Southwell-Sander, R. S. Stacey, E. T. W. Starkie, B. C. Thompson, C. P. K. Toland, F. S. Winton, C. H. England, and D. P. Firmin.

*Passed in Surgery only.

Part II., Physic, Pathology and Pharmacology.—R. Anderson, A. R. Banham, C. M. Barker, D. W. Bawtree, J. V. Broad, A. T. Curnow, C. J. M. Dawkins, Digges la Touche, R. H. Dyer, J. H. L. Easton, P. H. Fox, S. E. F. Gooding, G. J. Gross, A. H. Gurney, W. Heath, A. C. de B. Helme, J. S. Hensman, G. Herbert, H. P. Hutchinson, T. C. Jameson Evans, C. G. Jobbins, E. R. Keeble, R. W. Knowlton, O. L. Lander, R. W. McConnel, S. R. Matthews, R. B. Mayfield, E. J. Neill, T. N. Parish, J. A. Pocock, C. D. Politeyan, R. B. Pringle, A. W. Williams, J. K. Willson-Pepper, G. N. Wood, F. G. Wood-Smith, B. Wright, and M. A. Willcox.

UNIVERSITY OF EDINBURGH.—At a graduation ceremonial on Dec. 20th the following degrees were conferred:—

M.D.—Flora H. M. Calder, **T. C. Mitchell, **R. M. Murray, Lyon, †Eustace Russell, G. S. Scott, *Ta-Ming Tso.

Ch.M.—**Alice Bloomfield.

M.B., Ch.B.—W. S. Anderson, Reginald Austin, Ismay Bannerman, T. M. Beveridge, G. F. Bradbury, R. M. Bremner, J. F. C. du Toit, F. G. M. Fraser, E. E. Goldman, James Gorman, D. H. Hooper, E. G. Hurd-Wood, Isidor Kaplan, H. I. Lahouri, L. E. Lucas, K. C. Mackenzie, A. C. M'Laren, D. J. A. MacLean, Daniel Macleod, H. J. Melville-G. R. Parker, J. L. Parker, R. A. P. Paul, G. A. G. Peterkin, J. C. Robertson, †Nirodbaran Talukder, Anne Tillema, and S. C. H. Watters.

Diploma in Psychiatry.—†T. A. H. Munro.

Diploma in Public Health.—†K. V. R. Choudari.

AWARD OF FELLOWSHIP.

The Syme Surgical Fellowship was awarded to Dr. Thomas Carlyle Mitchell.

* Commended for Thesis. ** Highly commended for Thesis.
† In absentia.

UNIVERSITY OF SHEFFIELD.—At recent examinations the following were successful:—

FINAL EXAMINATION FOR M.B., CH.B.

Part I.—K. G. A. Barlow, Clem England, M. B. Hallam, Firth Hudson, Constance N. Jenkinson, S. K. Panniker, and Allan Spencer.

Part II.—Abraham Cohen, R. B. Gould, Bessy Hatherley, and J. H. Wilbourn.

UNIVERSITY OF LIVERPOOL.—At recent examinations the following were successful:—

M.CH. ORTH.

W. J. Eastwood, W. L. MacDonald, and J. F. Shepherd.

M.D.*

K. M. Cobban, L. Earlam, R. R. Evans, J. F. Galloway, and Mary S. Share-Jones.

FINAL EXAMINATION FOR M.B. AND CH.B.

Part II. (*1923 Regulations*).—M. L. Kaufman.

Part III. (*1923 Regulations*).—J. P. Flanagan, R. N. Johnson, I. Lipschitz, and J. L. Walker.

Part A. (*1924 Regulations*).—W. Dodd, J. J. M. Erskine-Young, M. Glynn-Morris, C. K. Holland, H. D. Owen, J. Polonsky, and H. E. C. Sutton.

Public Health.—D. I. A. Williams.

* To graduate July, 1930.

DIPLOMA IN TROPICAL MEDICINE.

S. D. Ahuja, R. E. Anderson, C. G. Booker, W. A. Bullen, E. N. Callum, P. P. D. Connolly, J. A. Cowan, G. Graham-Cumming, A. V. Greaves, G. S. Hale, A. T. Howell, C. N. Latham, J. E. McMahon, A. A. Miller, A. Rosenbloom, C. K. Row, R. N. Sewal, H. Singh, G. A. Talwrn-Jones, and H. N. Turner.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College on Dec. 18th, with Dr. J. Haig Ferguson, the President, in the chair, the following 23 candidates (out of 70 entered) who passed the requisite examinations between Sept. 26th and Oct. 4th, were admitted Fellows:—

Frans Bekker, Philip William Hulme Bleasdale, John Boyd Colquhoun, John Comrie, Cedric Duncombe, Andrew May Duthie, Duncan Hugh Fraser, Cecil Alexander Gardiner, Wallace John Gill, Alastair Livingston Gunn, Hukam Chand Gupta, James Haslam, Elinor Drinkwater Jackson Laurence Henry Leggett, Arthur Cecil Liesching, Vivian Mercer Metivier, David Ritchie Paterson, John Edward Piercy, Manindra Nath Sarkar, Sher Singh, George Ferguson Skinner, Oscar John Stahl, and Ryno Stockenstron Verster.

PRINCESSES AT HOSPITALS.—Princess Louise, Duchess of Argyll, recently opened a new wing of the Plaistow, E., Maternity Hospital and District Nurses' Home. The hospital now has 56 beds and is the fifth largest of its kind in London. The addition contains two wards of eight beds each, two single-bed wards, a labour ward, and infants' nursery. There has hitherto been such heavy pressure upon the accommodation that temporary beds have had to be in use continuously. The institution trains 200 midwives annually and 6000 mothers are attended every year. During the last decade the hospital's maternal mortality has been approximately 1 in 2000. The working expenditure exceeds £22,000.—Extensive additions to the South-Eastern Hospital for Children at Lower Sydenham were opened last week by Princess Marie Louise. The out-patients' department and the nurses' home have been enlarged, rooms have been provided for the medical and surgical staffs, for sunlight and massage treatment, and for children being treated for tonsils and adenoids.

Appointments.

Bristol General Hospital: WOOD, D., F.R.C.S. Eng., Honorary Surgeon; GRIFFITHS, S. J. H., M.B., Ch.B. Bristol, F.R.C.S. Eng., Honorary Assistant Surgeon; BURGESS, N., M.D., B.Chir. Camb., M.R.C.P. Lond., Honorary Assistant Physician in the Skin Department; TAYLOR, A. L., M.D., Ch.B., Leeds, Honorary Pathologist; KETTLEWELL, N. H., L.D.S. R.C.S. Eng., L.M.S.S.A. Lond., Honorary Dental Surgeon.

City of London Maternity Hospital: PRICE, J. A., M.B., B.Ch., Belf., Resident Medical Officer; SIMMONS, R. W. A., B.M., B.Ch. Oxf., Assistant Resident Medical Officer.

Queen Charlotte's Maternity Hospital: HUGHES, TOM, L., L.R.C.P. Lond., M.R.C.S., Senior Resident Medical Officer; JENNINGS, H. T., M.B., Ch.B. N.Z., F.R.C.S. Edin., Assistant Resident Medical Officer.

Certifying Surgeons under the Factory and Workshop Acts: FARMER, M. L., M.B., Ch.B. Liverp. (Shefford, Bedford); MEAD, G. H., L.R.C.P. Lond., M.R.C.S. (Eckington, Derby); SMITH, E. F., M.B., B.S. Lond. (Wokingham); and CREIGHTON, J. A., M.B., C.M. Glasg. (Calvert, Buckingham).

Vacancies.

For further information refer to the advertisement columns.

Acton Hospital, W.—Res. M.O. £150.
Belfast, Joint Nursing and Midwives Council, Northern Ireland.—Examiner of Midwives.
Birmingham, Dudley-road Hospital.—Gynæcologist and Obstetrician. £700.
Birmingham, Monyhull Colony, King's Heath.—Res. Asst. M.O. £250–£350.
Birmingham, Selly Oak Hospital.—Two Cas. O.'s. Each at rate of £200.
Blackburn and East Lancashire Royal Infirmary.—Res. H.P. £150.
Bolton, Townley's Hospital, Farnworth.—Second Asst. M.O. £225.
Bootle Borough Hospital.—Hon. Laryngologist and Aurist.
Bradford Children's Hospital.—H.S. and H.P. Each £120.
Bradford Royal Infirmary.—Res. Surg. O. £250.
Burnley, Victoria Hospital.—H.S. At rate of £125.
Canterbury, Kent and Canterbury Hospital.—H.S. and H.P. Each at rate of £125.
Cardiff, Prince of Wales' Hospital.—H.S. for Crossways Country Branch Orthopædic Hospital. £120.
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Sen. and Jun. H.S.'s. At rate of £120 and £100 respectively.
Charing Cross Hospital, Strand, W.C.—Non-resident House Anæsthetist.
Durham County Mental Hospital.—Jun. Asst. M.O. £350.
Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £120.
Great Yarmouth County Borough.—Asst. M.O.H. and Asst. Tub. O. £600.
Hospital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150. Also Clin. Asst. M.O. for Venereal Dept. £1 1s. per session.
Hull Royal Infirmary.—Third H.S. Also Asst. H.P. At rate of £150 and £130 respectively.
Leeds University.—Tutor in Obstetrics and Gynæcology. £475.
London Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150. Also Hon. Obstet. Surg.
London Hospital Medical College, Mile End, E.—Liddle Triennial Prize. £120.
Manchester, Ancoats Hospital.—Asst. Pathologist. £350.
Manchester, Babies' Hospital, Burmage-lane, Levenshulme.—Sen. Res. M.O. At rate of £125.
Manchester, Salford Royal Hospital.—H.S. for Orthopædic Dept. At rate of £125.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Northampton Education Committee.—Asst. School Dentist. £450.
Queen Mary's Hospital for the East End, Stratford, E.—Cas. O. £150. Also Hon. Asst. S.
Redruth, Cornwall, West Cornwall Miners and Women's Hospital. Res. M.O. £200.
Rochdale Infirmary and Dispensary.—Jun. H.S. £175.
St. John's Hospital, Lewisham, S.E.—Radiologist.
St. Mary's Hospital, W.—Asst. Pathological Chemist. £300.
Sheffield, Jessop Hospital for Women.—Two Asst. H.S.'s. Each at rate of £100.
Southampton County Borough.—School Dentist. £450.
Swansea County Borough.—Asst. M.O. £600.
Walsall General Hospital.—Cas. H.S. At rate of £120.
West London Hospital, Hammersmith-road, W.—Asst. Dental. S.
Westminster Hospital, Broad Sanctuary, S.W.—House Anæsthetist. At rate of £100.
Wigan Infirmary.—Third H.S. £150.

Births, Marriages, and Deaths.

BIRTHS.

FINLAY.—On Dec. 14th, at The Gables, Honiton, Devon, the wife of Dr. J. E. Finlay, of a son.

MARRIAGES.

JONAS—PETLEY.—On Dec. 19th, at All Saints', Ennismore-gardens, William Howard Powning Jonas, B.A., M.R.C.S., L.R.C.P., of "Brooklands," Hemel Hempstead, Herts, to Kathleen Isabel, only daughter of Mr. and Mrs. C. Ralph Petley, of Vert Lac, Lausanne, Switzerland.

DEATHS.

CANDY.—On Dec. 16th, George Spence Candy, M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., aged 44.
DWYER.—On Dec 16th, at "The Mount," Lapworth, Warwickshire, after a short illness, Henry Hamilton Dwyer, L.R.C.P. & S.I., L.M.
EGAN.—On Dec. 11th, at Kingston, Jamaica, Major William Egan, R.A.M.C., D.S.O., O.B.E.
MILLIGAN.—On Dec. 19th, at a nursing home, Sir William Milligan, M.D., LL.D., of Westbourne, Rusholme, Manchester, and Polmood, Broughton, Peeblesshire.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NORTH-EAST LONDON POST-GRADUATE COLLEGE. Prince of Wales's General Hospital, Tottenham, N.
The same arrangements will be made as were announced in THE LANCET of Dec. 14th.

Notes, Comments, and Abstracts.

THE USES OF X RAYS.

THE exhibition of radiography just concluded by the Royal Photographic Society of Great Britain is to be the first in a series illustrating the "uses of photography in the service of man"; it attempted especially to illustrate the history and development of the scientific and industrial value of X rays. Various forms of early X ray tubes, as well as recent apparatus, were lent by the Davy Faraday Laboratory, by Mr. Cuthbert Andrews, and Mr. Geoffrey Pearce. Dr. W. H. George lent an exhibit demonstrating the use of photographic grids in X ray crystallography.

The medical section showed a number of radiograms of those surgical and medical conditions in which diagnosis is materially helped by use of X rays. Advances in dental work included simultaneous photography of the profile and the jaw, so that artificial teeth may be made to conform to the normal shape of the face as much as possible. Excellent photographs demonstrating the use of tetraiodophenolphthalein in cholecystography and collargol in pyelography were shown, while the uses of barium in defining œsophageal obstruction, carcinoma of the stomach, and intestinal conditions of various kinds, were illustrated. The number and variety of photographs shown was somewhat limited from a medical point of view, but as the intention was to demonstrate the photography rather than the innumerable occasions of its utility, this was not surprising. The radiograms in this section were lent by Kodak, Ltd., by Mr. H. T. Ferrier, and by the Ilford X ray Department.

In the section devoted to transparencies various recent improvements in apparatus were demonstrated, including a portable X ray apparatus made by the "Solus" Electrical Company. Mr. Herbert Flower lent an interesting series of negatives showing X ray exposures versus screen exposures on various bone subjects. The X ray exposures showed a marked gain in contrast without loss of detail. Photographs of old forms of apparatus, including early patterns of couches in which the tube was unprotected, were sent by Messrs. Schall and Son, Ltd., and could be compared with the latest types which were shown with the transparencies.

The use of X rays in detecting flaws in metal castings was demonstrated in the industrial section, and the value of this one function in the service of man is hard to estimate. It was unfortunate that the absence of a photographic aspect excluded deep ray therapy from representation in an exhibition designed to demonstrate the value of the Rontgen ray.

TWO DIARIES FOR 1930.

THE Anglo-French Drug Company (238A, Gray's Inn-road, London, W.C. 1) have sent us a copy of their block diary for 1930, measuring 6 by 4¼ inches, and showing a page to a day. It serves as a useful accessory to the writing table, and attached to the inside of the front cover is a concise list of the pharmaceutical products manufactured and distributed by the firm.—We have also received the medical diary issued by Messrs. Burroughs Wellcome and Company. It comprises 404 pages, measuring 6½ by 3¾ inches, bound in a case, and gives therapeutic notes, an index of diseases and treatments, symptoms and treatment of poisoning, notes on diet, and other useful information, including a list of the firm's well-known "Tabloid" products. Either of these diaries may be obtained on application.

Radium Needles.—Prof. F. L. Hopwood writes that in the paper presented by Miss Smallman and himself at the Radiological Congress (THE LANCET, Dec. 14th, p. 1276) it was stated that with half a gramme of radium distributed in needles and containers 899 cases were treated in *two* years (not one year) at St. Bartholomew's Hospital.

THE address of the National Association for the Prevention of Tuberculosis is now Tavistock House North, Tavistock-square, London, W.C. 1.

A HOSPITAL'S CLAIMS FOR PAYMENT.—Some time ago the statutes of the Royal Salop Infirmary at Shrewsbury were altered to enable the governors to charge motor accident patients with the cost of their treatment and maintenance. It is now officially reported that the result has been disappointing. Sixty-four such patients have since been discharged, and were presented with accounts amounting to £868. Eight patients only have paid, the entire refund amounting to £94 11s.

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Professor of Bronchoscopy and Esophagoscopy in the University of Pennsylvania, in the Jefferson Medical College, and in the Graduate School of Medicine of the University of Pennsylvania

and

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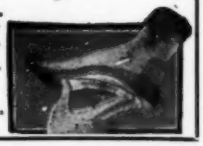

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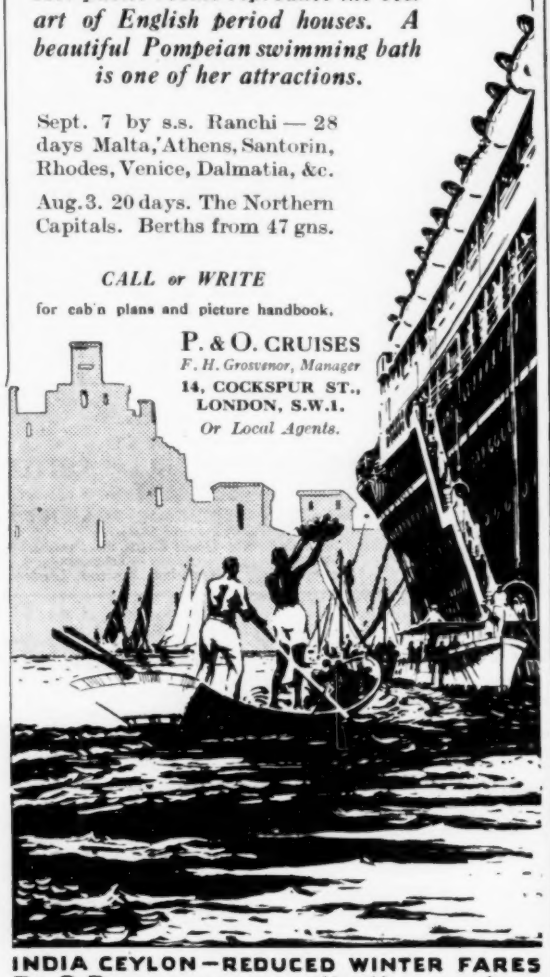

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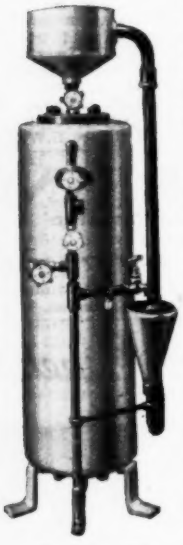

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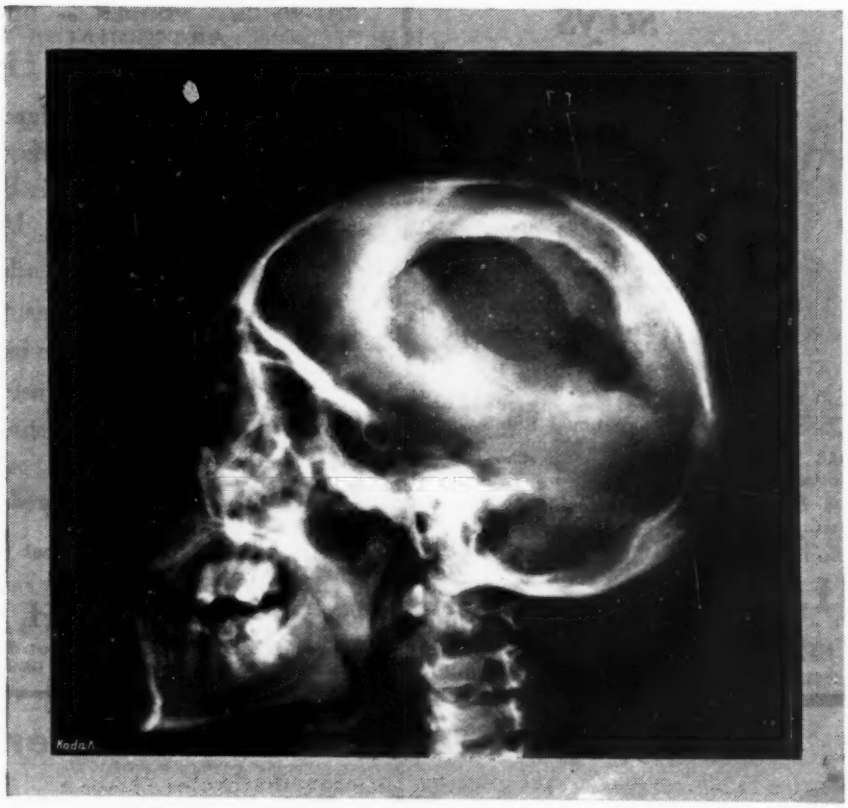

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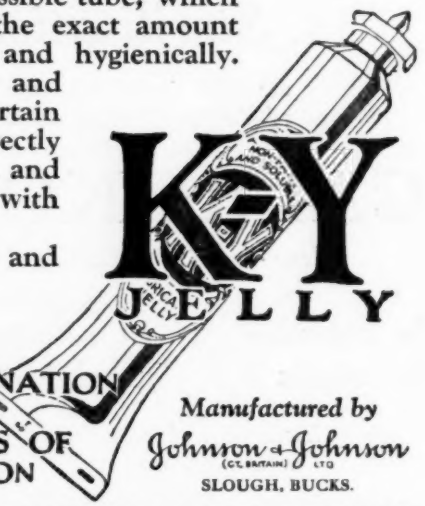

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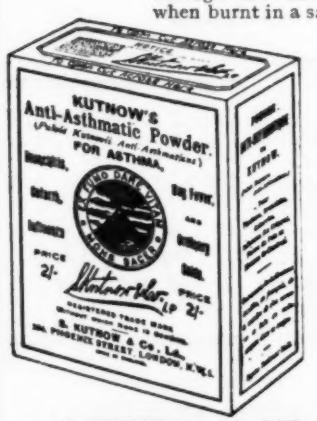

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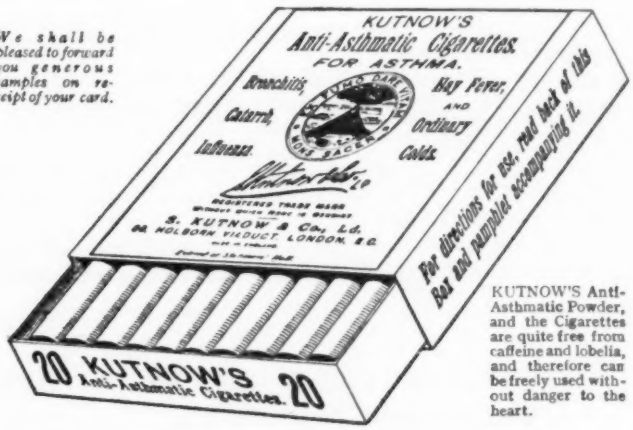
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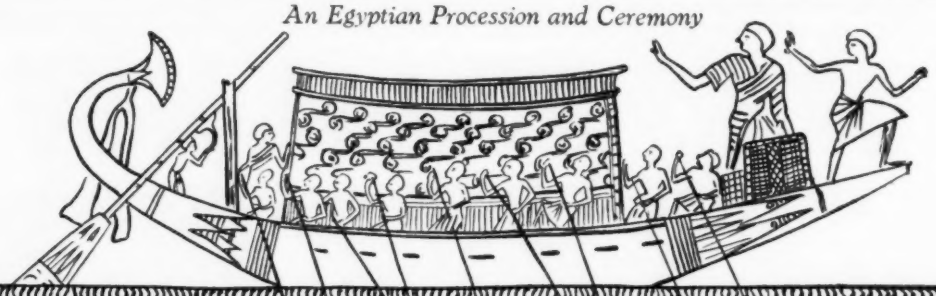

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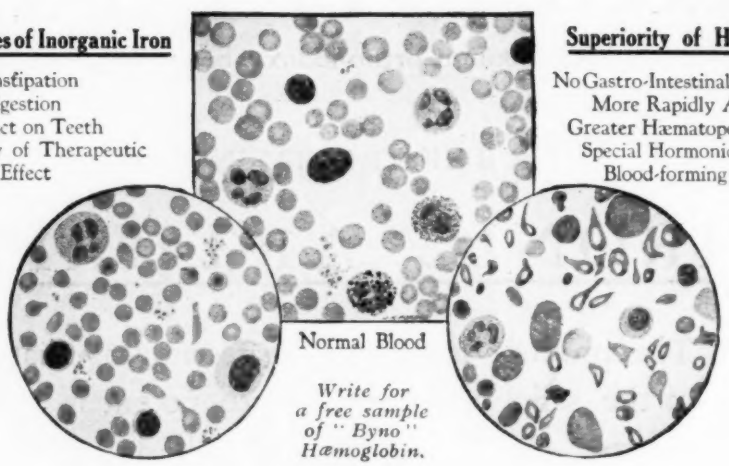

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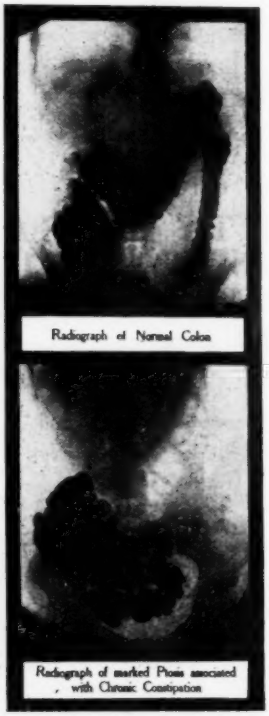

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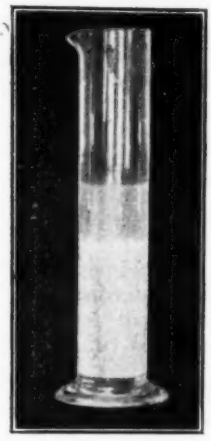

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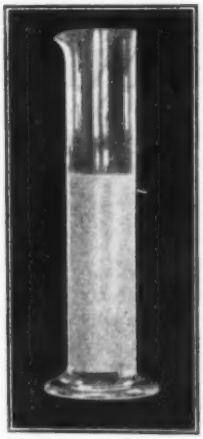

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Pitocin represents the oxytocic principle of the pituitary gland and is standardised to the same degree of oxytocic activity as Pituitrin, namely 10 units per c.c.

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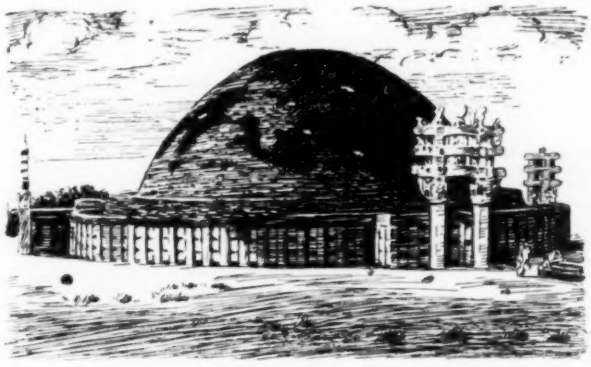

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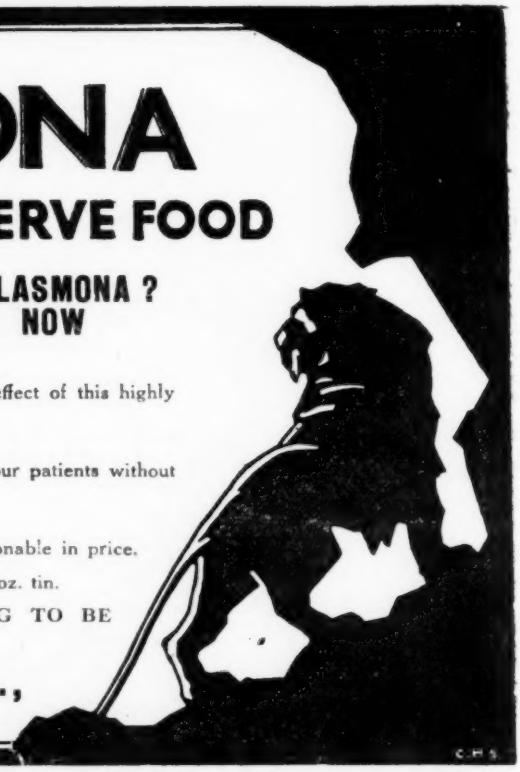

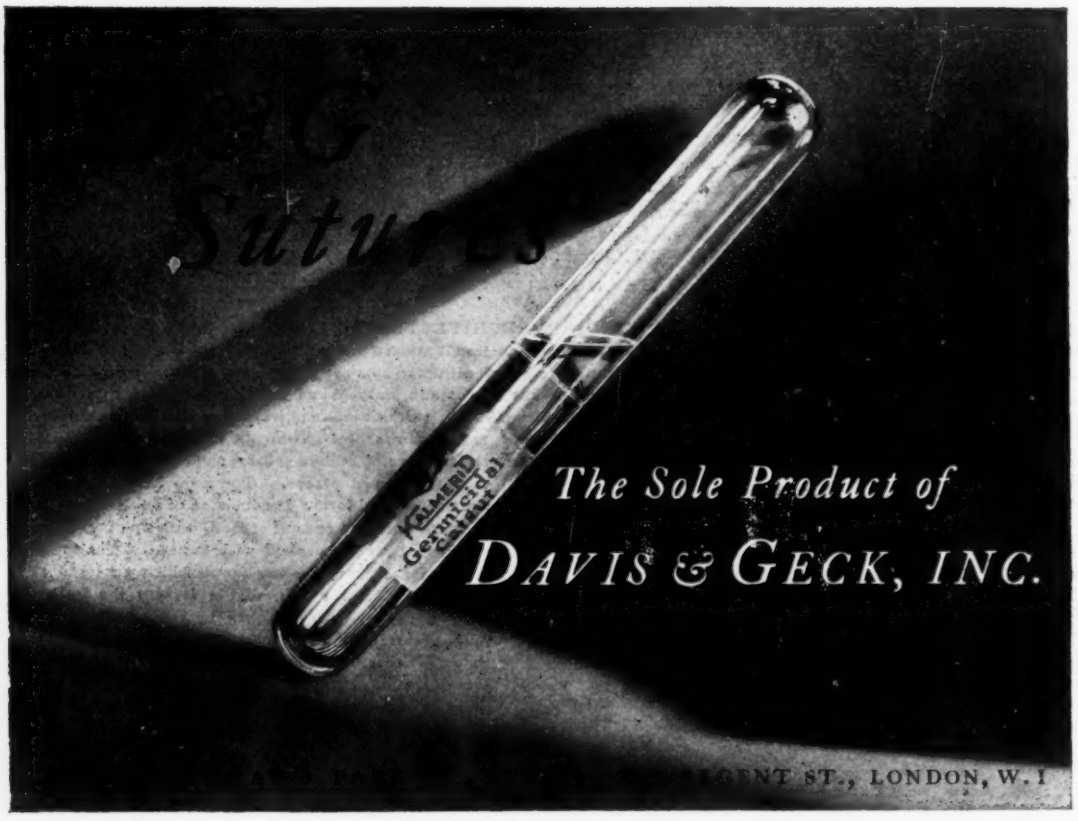

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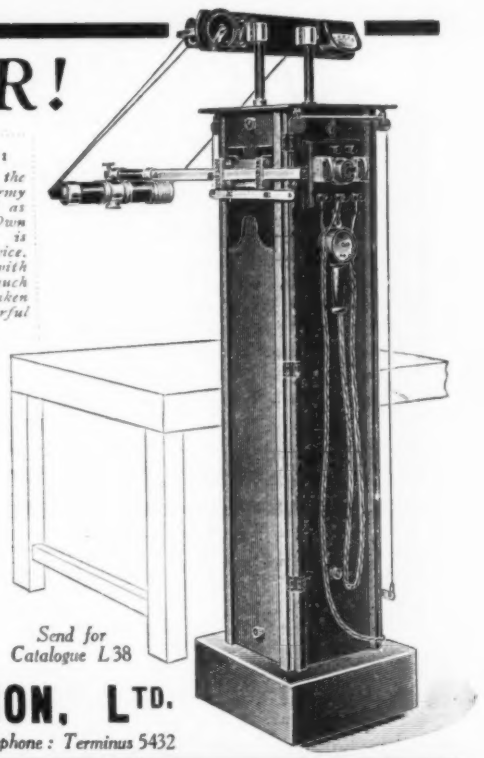

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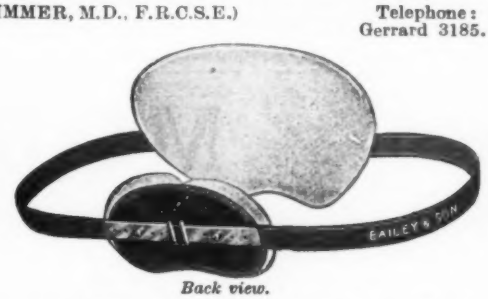

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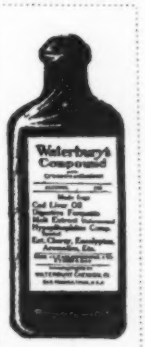

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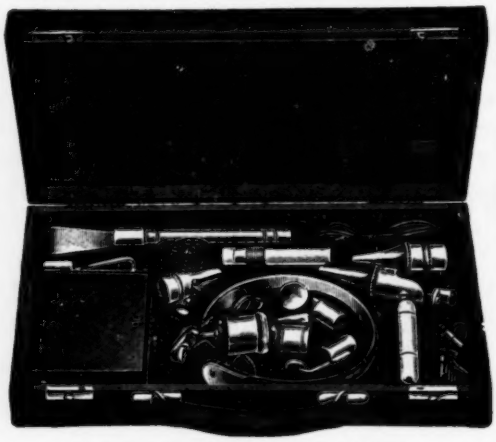

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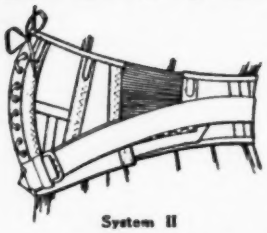

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Terms include (with rare exceptions) all forms of treatment, for which exceptional facilities exist, there being a staff of Consultant Specialists and the Central Laboratory of London County Mental Hospitals being attached to the Hospital. Enquiries of EDWARD MAPOTHER, M.D., F.R.C.P., F.R.C.S., Medical Superintendent.

NORTHUMBERLAND HOUSE,

GREEN LANES,

Telegrams: "SUBSIDIARY, LONDON."

FINSBURY PARK, N. 4.

Telephone: North, 0888

A PRIVATE HOME for the treatment of patients of both sexes suffering from Mental Illnesses.
Conveniently situated four miles from Charing Cross. Easy of access from all parts.
Six acres of ground, highly situated, facing Finsbury Park.
Voluntary Boarders received without certificates. Private suites. Convalescent Home, KEARSNEY COURT, DOVER.
For further particulars, apply to the MEDICAL SUPERINTENDENT.

PECKHAM HOUSE, 112, Peckham Road, London, S.E. 15

Telegrams: "Alleviated, London." **Telephone: Rodney 4741 and 4742.**

The above House, which was established in 1825, is an Institution for the care and treatment of persons suffering from mental diseases and nervous disorders. Both certified patients and Voluntary Boarders are received. Separate houses for treatment and accommodation of special cases adjoin the Institution. There is a seaside branch, Kearnsey Court, near Dover, to which patients may be sent for treatment or on holiday. Motor and carriage exercise is provided as required. Patients can avail themselves of a course of physical drill. Tennis courts. Entertainments, dances, and indoor amusements held throughout the year.

Illustrated prospectus and further particulars can be obtained from the MEDICAL SUPERINTENDENT.

CAMBERWELL HOUSE,

Telegrams: "PSYCHOLIA, LONDON." 33, PECKHAM RD., LONDON, S.E. 5. Telephone: Rodney 4731—4739

For the Treatment of MENTAL DISORDERS.

Completely detached Villas for Mild Cases, with private suites if desired. Voluntary Patients received. Twenty acres of grounds. Hard and Grass Tennis Courts, Croquet, Squash Rackets, and all indoor amusements. Wireless and other Concerts. Occupational therapy. Daily Services in Chapel.

Senior Physician: DR. HUBERT J. NORMAN, assisted by three Medical Officers, also resident.

An Illustrated Prospectus, giving full particulars and terms, may be obtained upon application to the Secretary

HOVE VILLA, BRIGHTON.—A Convalescent Branch of the above.

THE OLD MANOR SALISBURY

A Private Hospital for the Care and Treatment of those of both sexes suffering from MENTAL DISORDERS.

Extensive grounds. Detached Villas. Chapel. Garden and dairy produce from own farm. Terms very moderate

CONVALESCENT HOME AT BOURNEMOUTH standing in 9 acres of ornamental grounds, with tennis courts, etc., which Patients or Boarders may visit, by arrangement, for long or short periods.

Illustrated Brochure on application to the Medical Superintendent, The Old Manor, Salisbury. Telephone: 51

KINGUSSIE, N.B.

THE GRAMPIAN SANATORIUM.

Situated in the Upper Speyside district of Inverness-shire. One of the highest inhabited districts in Britain.—"The Switzerland of the British Isles." Bracing and dry mountain climate, well sheltered. Sanatorium specially built for the Open-Air Treatment of Tuberculosis. Opened in 1901. Elevation nearly 900 ft. above sea-level. Central Heating. Electric light throughout buildings and in rest shelters. FULLY EQUIPPED X-RAY PLANT. All forms of Treatment available, including facilities for Treatment by artificial Pneumothorax and Ultra-Violet Rays for Surgical cases of Tuberculosis. A few rooms are now reserved for surgical cases not requiring immediate operation. Terms: £4 6s. 8d. to £6 6s. 0d. per week inclusive, no extras. FELIX SAVY, M.B., Ch.B., Physician-Supt.—*For Particulars apply:* Wm. KEIR, Secretary.

PRIOR PLACE SANATORIUM

HEATHERSIDE, CAMBERLEY.

RECENTLY OPENED FOR THE TREATMENT OF PULMONARY TUBERCULOSIS.

WELL SITUATED ON HIGH GROUND AND SURROUNDED BY PINES AND HEATHER.

RESIDENT MEDICAL SUPERINTENDENT: Dr. H. O. BLANFORD, late Medical Superintendent, King Edward VII. Sanatorium, Midhurst, to whom applications for particulars may be made.

MUNDESLEY SANATORIUM

Specially built for the treatment of Pulmonary and other forms of Tuberculosis. Aspect S.S.W., on a carefully chosen site. Pure, bracing air. High sunshine record. Heliotherapy. Arc-light treatment. One mile from the coast. Electric light throughout. X-Ray installation. Full day and night Nursing Staff. Wireless (headphones) throughout.

Resident Physicians:

S. VERE PEARSON, M.D.(Camb.), M.R.C.P.(Lond.)
L. WHITTAKER SHARP, M.B.(Camb.).
ANDREW MORLAND, M.B. (Lond.)

Apply: Mr. D. C. FORD, Secretary,
The Sanatorium, Mundesley, Norfolk.

RUTHIN CASTLE

(Formerly Duff House, Banff).

The first Private Hospital in the United Kingdom to be fully provided with a whole-time specially qualified Staff of Doctors, Analytical Chemists, Bacteriologists, Radiologists, Nurses, Dietists, Masseurs, and Masseuses, and a full equipment of Laboratories, X-rays, Electrocardiograph, Artificial Sunlight, and Medical Baths.

The Hospital is equipped for the diagnosis and treatment of any form of ill-health, except Mental and Infectious Diseases. The fees are inclusive.

The climate is mild and the neighbourhood beautiful.

Apply: THE SECRETARY,
Ruthin Castle, North Wales.

***Telegrams:* CASTLE, RUTHIN.** ***Telephone:* 66 RUTHIN.**

EAST ANGLIAN SANATORIUM

This Sanatorium was specially built for the treatment of **Pulmonary and other forms of Tuberculosis**, and is situated on an ideal site facing S.S.E.—very sunny district in the "Constable" Country. **Special Treatment** by artificial **Pneumothorax (X-ray Controlled)**. Electric lighting throughout, and radiators and wireless in all rooms.

TERMS: From 4 to 8 guineas per week.

On the estate of 330 acres there is ample opportunity for training in General Farming, Poultry Farming, Angora Rabbit Breeding, Gardening, &c., and various Handicrafts.

Med. Supt.: **Dr. Jane Walker.**
Asst. Med. Supt.: **Dr. Eleanor Soltau**; and other Medical Officers.

For full particulars, illustrated prospectus, etc., apply to the SECRETARY, East Anglian Sanatorium, Nayland, near Colchester.

Telephone and Telegrams: NAYLAND 1.

TOR-NA-DEE SANATORIUM
MURTLE, DEESIDE, ABERDEENSHIRE.

Medical Director: DAVID LAWSON, M.D., F.R.S.E.

FULLY EQUIPPED WITH *EVERY MODERN APPLIANCE* FOR THE DIAGNOSIS AND TREATMENT OF ALL FORMS OF TUBERCULOSIS & ALLIED DISEASES.

Physician Superintendent: J. M. JOHNSTON, M.B., D.P.H., etc.

Full particulars and Prospectus on application to the Secretary.

INCLUSIVE TERMS: SEVEN GUINEAS A WEEK.

LINFORD SANATORIUM,

RINGWOOD, NEW FOREST, HANTS.

Established 1898 for the treatment of Tuberculosis. Radiators and Electric Light throughout. Hot and cold water and shower bath in nearly all rooms. Powerful X-Ray Plant. Ultra-Violet Rays. Full Nursing Staff. All forms of treatment available.

Farm of 120 acres, including 40 acres wood. Herd of Tuberculin-tested Guernsey cows kept.

Resident Physicians—ARTHUR DE W. SNOWDEN, M.D., B.Ch.(Cantab.).
A. G. E. WILCOCK, M.R.C.S., L.R.C.P.
COLIN CASSIDY, M.B., B.Ch.(Cantab.).

HOSPITAL FOR CONSUMPTION

AND DISEASES OF THE CHEST,
BROMPTON,
and FRIMLEY SANATORIUM.

SPECIAL WARDS FOR PAYING PATIENTS.
3 to 4 guineas per week.
Apply to the Secretary, Brompton Hospital, S.W. 3.

DARTMOOR SANATORIUM. 750 FEET ABOVE SEA-LEVEL

Established 1903 for Treatment of Pulmonary and other forms of Tuberculosis. Sheltered Situation on the slopes of the bracing moorland. Radiographic Installation, Electric Light, Central Heating, Separate Bedrooms, Efficient Treatment combined with individual comfort and minimum restrictions. Illustrated Prospectus on request to the Resident Physician: C. H. BERRY, M.R.C.S., L.R.C.P., Dartmoor Sanatorium, Chagford, Devonshire. Telephone: 11 CHAGFORD.

THE BRITISH SANATORIUM

MONTANA sur/Sierre, Switzerland.

Opened on January 1st, 1929, for the treatment of Pulmonary Tuberculosis—English Nursing Staff.
Inclusive terms from **7 guineas a week.**

Medical Superintendent:
HILARY ROCHE, M.D. (Melb.), M.R.C.P. London.
Tuberculous Diseases Diploma (Wales); formerly H.P. Brompton Hospital, Medical Superintendent Palace Sanatorium, Montana.

SMEDLEY'S HYDRO.

MATLOCK. Established. 1853.

Physicians: G. C. R. Harbinson, M.B., B.Ch.
R. MacLelland, M.D., C.M.(Edin.).

Prospectus and full information on application to the Manager.

SWITZERLAND.

SANATORIUM FOR NERVE COMPLAINTS.

KÜSNACHT on the LAKE OF ZURICH.

Receives all kinds of **Nerve Patients.** Cure of Alcohol and Drug habits. Modern treatment of Tabes Dorsalis and General Paralysis. Beautiful situation, with large gardens on the lake shore. Opportunities for Recreation and Sport. *PROSPECTUS ON APPLICATION.*

TWO CONSULTING DOCTORS. PROPRIETOR AND DIRECTOR: DR. TH. BRUNNER.

BADEN-BADEN IN THE BLACK FOREST, SOUTH GERMANY.

Radio-active Saline Thermal Springs 155° Fahrenheit. Daily output 176,000 gallons.

Indications: Gout, Rheumatic Ailments, Neuralgia, Catarrhs of the Respiratory Organs.

PALATIAL BATHING ESTABLISHMENTS. HOTELS FITTED WITH PRIVATE THERMAL BATHS. INHALATORIUM. PUMP ROOM.

NEW INTRODUCTION: COMBINED TREATMENT FOR STIFF AND INACTIVE JOINTS.

Grape Cure in the Autumn	Mountain Railway on the Merkur (2100 feet)	Rest Cures and Open-air Treatment	Concerts, Theatres, Dances All Kinds of Outdoor Sport

Information, Prospectuses, &c., may be had from the **"Staedtische Kurdirektion," Baden-Baden**

DROITWICH SPA

Famous for its natural Brine Baths which will cure Rheumatism and Allied Ailments.

RAVEN HOTEL or PARK HOTEL

famous for their comfort and hospitable service to each and every one of their guests.

Adjoining Brine Baths. 230 rooms. Extensive grounds. Golf, tennis, mixed bathing. Lock-up garages and cars for hire. Illustrated booklet on request. 'Phone: 50 or 38.

PEEBLES HYDRO.

Beautifully situated 600 feet above sea level. Facing South, completely sheltered from North and East.
21 miles from Edinburgh.
All modern Baths, Douches, Massage and Electrical Treatment, Ultra-violet-Radiation. Physician in attendance.
IDEAL HEALTH RESORT.
Electric Light, Central Heating, Electric Lift, Three Billiard Tables, Ball Room, Winter Garden, Swimming Bath, Hard and Grass Tennis Courts, Badminton, Croquet Lawn, Golf Course.
Prospectus from Manager. 'Phone: Peebles 2.

FUNCTIONAL NERVOUS DISORDERS ALCOHOLISM and DRUG ADDICTION

at CALDECOTE HALL, NUNEATON.

This Mansion has been opened upon the most modern and scientific lines both physical and mental.

Resident Medical Superintendent—
A. E. CARVER, M.A., M.D., M.R.C.S., D.P.H., D.P.M.

Full particulars upon request.
Prospectus from the SECRETARY, 60, Marsham Street, Westminster, S.W.1

ALCOHOLISM, DRUG HABIT and NEURASTHENIA.

BAY MOUNT, PAIGNTON.

Ladies and Gentlemen treated in small Private Home.

EXCELLENT RESULTS FROM MODERN TREATMENT.

SPLENDID CLIMATE AMPLE AMUSEMENT

MODERATE INCLUSIVE TERMS.

Prospectus, report, etc., from STANFORD PARK, M.B., Ch.B., Res. Med. Supt. *Phone: Paignton 5110.*

ALCOHOLISM, OTHER DRUG HABITS, and TROPICAL Ailments

THE HARE NURSING HOME

As founded and established by the late Dr. FRANCIS HARE, for 20 years Med. Supt. of The Norwood Sanatorium, and author of "Alcoholism," etc.; for the treatment of ALCOHOLISM, other Drug Habits, Insomnia, Neurasthenia, Functional Nervous Disorders, TROPICAL Ailments, etc.

"THE OLD HILL HOUSE," CHISLEHURST, KENT.

Terms Moderate. Quiet and pleasant situation.
Ladies and gentlemen admitted for treatment.

For prospectus, etc., write or phone, WALTER E. MASTERS, M D . M R C.S., D.P.H., Barrister-at-law (Res. Med. Supt.)
Phone: Chislehurst 451. Telegrams: "Masters," Chislehurst

INEBRIETY.

Telephone: 16 Rickmansworth

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and others for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the banks of the river Colne. Full sized billiards, tennis, croquet, bowls. Golf (Moor Park and Sandy Lodge) close by.—Apply to F. S. D. Hogg, M.R.C.S., &c., Res. Med. Supt.

THE RESIDENTIAL TREATMENT OF ALCOHOLISM & DRUG ADDICTION.

RENDLESHAM HALL

(Postal Address), WOODBRIDGE, SUFFOLK

RENDLESHAM HALL, which is open to receive patients, is essentially a Sanatorium. Its daily life and routine are that of an ordinary comfortable holiday or health resort, or of a large country house. Each patient has all the privileges of a guest consistent with the prescribed medical treatment.

Rendlesham Hall has 45 Bedrooms, and about 450 acres of Gardens and Park. It has also a private Nine-hole Golf Course, Tennis and Croquet Lawns, and Bowling Green.

Illustrated Booklet, giving particulars as to terms, etc., can be had on application to THE RESIDENT MEDICAL SUPERINTENDENT.

Telegrams and Telephone:
WICKHAM MARKET 16.

RENDLESHAM HALL

To those desiring to be nearer London,

THE MANSION, BECKENHAM PARK, BECKENHAM,

as carried on for the last twenty years, is available.

Booklet and particulars from THE RESIDENT MEDICAL SUPERINTENDENT.

Telephone: RAVENSBOURNE 0648. *Telegrams:* NOROTORIUM, BECKENHAM

Proprietors: THE NORWOOD SANATORIUM, LIMITED.

HOME FOR EPILEPTICS
MAGHULL, near LIVERPOOL.

A few vacancies for First Class Patients in a Special Home in this Colony. Terms £3 per week and upwards.

Apply:— Wm. GRISEWOOD & SON,
2, Exchange Street East, - - - - - Liverpool

NATIONAL ADOPTION SOCIETY,
4, Baker Street, W.1

(West of England Branch: 8, Bennett Street, Bath)

seeks Adopting Homes for Baby Boys and Girls who are medically recommended.

No payment.

EPILEPSY

Attendance at school is a necessary part of the satisfactory treatment of Epilepsy in Children.

COLTHURST HOUSE SCHOOL

meets all the requirements of children of middle class parentage. Extensions made necessary by the success of the school have created several vacancies.

Only bright and intelligent boys and girls are eligible for admission.

Apply to the MEDICAL SUPERINTENDENT, COLTHURST HOUSE SCHOOL, WARFORD, ALDERLEY EDGE.

PRIVATE PATIENTS.

London County Council.—

Accommodation for Male Paying Patients is provided at the LONDON COUNTY MENTAL HOSPITAL, Claybury, Woodford Bridge, Essex.

The hospital is thoroughly equipped for modern treatment of certified cases.

Terms, exclusive of clothing an special luxuries, for patients having a legal settlement in the County of London, 44s. 11d. a week; for others, 48s. 5d. a week.

Full particulars from the Medical Superintendent, Claybury Mental Hospital, or from the Acting Chief Officer, Mental Hospitals Department, he County Hall, S.E.1.

Telegraphic Address: "Relief, Old Catton." Telephone: 290 Norwich.

NERVOUS & MENTAL AFFECTIONS.

Ladies only received.

The Grove, Old Catton, Norwich.—

A High-class Home for the Curative Treatment of Nervous Affections. Voluntary Boarders are also received without certificates.

For full particulars apply to the Misses McLINTOCK, or to Dr. S. BARTON, 34, Surrey-street, Norwich, Visiting Physician.

Grove House, All Stretton, Church
STRETTON, SHROPSHIRE.

A PRIVATE HOME for the Care and Treatment of a limited number of Ladies Mentally Afflicted.

Climate healthy and bracing.

Apply to Dr. McClintock, Proprietor and Resident Medical Superintendent.

Preston Deanery Hall, Northampton.
3¼ miles L.M.S. Station.

This Dietetic Establishment is equipped for the complete investigation and treatment of patients on rational lines. Own X ray and Laboratory. Biochemical investigation is made a special feature.

Resident Biochemist, Masseurs and Masseuses, Hydro and Electro Therapeutics, Fasting on Scientific Principles. The Staff are specially qualified to deal with the errors of Metabolism and provision is made for the treatment of Tropical Diseases.

Further particulars from the Secretary, Preston Deanery Hall, Northampton Tel.: Hardingstone 6.

Physician of wide experience in Nervous

and Mental work has a VACANCY in his Private Home for a Patient. Individual and Intensive Treatment. Extensive lawns. Beautiful gardens. In-door and out-door occupations and games. Motoring. Easy distance from town. Terms moderate. Relatives interviewed in London.—Address, No. 445, THE LANCET Office, 423, Strand, W.C.2.

Jewish Maternity Hospital
Jewish Maternity Home (Incorporated),
[Underwood-street, E.1]

RESIDENT MEDICAL OFFICER required to commence duties on August 17th. Board, residence, and laundry provided. Salary £50 per annum. The appointment is for six months.

Applicants may be either Male or Female.

Applications, with copies of three testimonials, to be sent to the Secretary not later than July 12th.

St. John's Hospital, Lewisham, S.E.13

Applications are invited for TWO MALE RESIDENT HOUSE APPOINTMENTS for a period of three months, commencing on August 1st. Salary for each £100 per annum. Successful applicants must apply for a term of duty in the next senior appointment for three months beginning 1st November.

Applications, with copies of testimonials, should reach the Secretary not later than Wednesday, July 10th, 1929.

The Willesden General Hospital
(Incorporated), N.W.10.

The Executive Committee invite applications for appointment of REFRACTION ASSISTANT to the Hospital. Honorarium at the rate of 50 guineas per annum. Detailed applications, with copies of testimonials, to be received by the undersigned not later than Monday, 8th July, 1929. R. J. HEARNE, Secretary.

West End Hospital for Nervous
DISEASES (In-Patient Dept., Gloucester Gate, Regents Park, N.W.1).

The Committee of Management invites applications from British Male candidates for the vacancy of JUNIOR HOUSE PHYSICIAN. To start duty August 1st. Salary £100, with board, residence, and laundry. Appointment in the first instance for six months. Applications, with copies of three testimonials, must be received by the undersigned not later than July 22nd.

73, Welbeck-street, W.1. J. P. WETENHALL Secretary.

City of London Hospital for Diseases
OF THE HEART AND LUNGS, Victoria Park, E.2.
(Bus, Tram, and Rail, Cambridge Heath, L. & N.E. Railway.)

The Committee invite applications for the post of ASSISTANT LARYNGOLOGIST.

Candidates must be fellows of the Royal College of Surgeons of England. An honorarium is attached to the post. Applications, accompanied by copies of testimonials, should reach the Secretary at the Hospital not later than Monday, 15th July, 1929.

GEORGE WATTS, Secretary.

County Borough of West Ham.
PLAISTOW FEVER HOSPITAL.

SECOND ASSISTANT MEDICAL OFFICER (Male) required. Appointment will be for one year. Salary £300 per annum, with residence, board, and laundry. Preference will be given to candidates who have held a Resident appointment in a General Hospital. Good facilities for post-graduate study, such as the D.P.H.

Applications, with copies of three recent testimonials, to be sent to the Medical Superintendent, Plaistow Fever Hospital, London, E. 13.

Hospital for Consumption & Diseases
OF THE CHEST, Brompton, S.W.3.

The Committee of Management invite applications for the post of HOUSE PHYSICIAN (for which there are three vacancies). The duties include work in the Out-patient Department as well as in the Wards.

Applications, with copies of testimonials, must reach the undersigned not later than Saturday, 13th July.

The appointment is for six months, commencing on 1st August, with an honorarium of £50.

Brompton, June, 1929. FREDERICK WOOD, Secretary.

Seamen's Hospital Society.—The

Committee of Management invite applications for the appointment of ASSISTANT RADIOLOGIST at the DREADNOUGHT HOSPITAL, Greenwich.

The elected candidate will be appointed for twelve months but will be eligible for re-election.

Candidates must be fully qualified Medical Practitioners. In view of the future rearrangement and extension of this Department the elected Officer will be required to attend not less than two half days a week.

There is an honorarium of fifty guineas attached to the post.

Applications, with copies of three recent testimonials, to be sent in on or before the 16th July to the undersigned, from whom further particulars can be obtained.

Greenwich, 24th June, 1929. R. E. V. BAX, Secretary.

National Hospital, Queen - square,

W.C. 1.—REGISTRAR.—Applications are invited for the post of Registrar. The salary is £200 a year. Applications, with recent testimonials, should reach the undersigned, from whom any further particulars may be obtained, on or before Friday, July 12th, 1929.

GODFREY H. HAMILTON, Secretary.

St. Mary's Hospital for Women and

CHILDREN, Plaistow, E.13.

Applications are invited for the post of CLINICAL ASSISTANT in the Medical Outpatient Department with access to the Wards. The appointment is for six months. Attendance Monday afternoons at 2 o'clock. Tea provided. Applications, with copies of three recent testimonials, to be sent to the undersigned as soon as possible. A. ERNEST WILKES, Secretary.

The Prince of Wales's General

HOSPITAL, Tottenham, N.15.

Applications are invited for the post of HONORARY ASSISTANT PHYSICIAN.

Candidates must be graduates in Medicine of a British University, and Fellows or Members of one of the Royal Colleges of Physicians.

Applications, stating age, qualifications, and accompanied by copies of three recent testimonials, must be sent in by the first post on Monday, 22nd July next. FREDK. W. DREWETT, Director.

July 2nd, 1929.

Princess Louise Kensington Hospital

FOR CHILDREN, North Kensington.
(42 beds pending completion.)

The Board of Management invite applications for the post of HON. RADIOLOGIST. Candidates must be registered medical practitioners and it is desirable that they should hold the D.M.R.E. Camb. At least one attendance weekly will be necessary. Further details should be obtained from the Secretary, Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W. 10, and formal applications should be sent in not later than first post on Thursday, July 24th.

Woolwich and District War Memorial

HOSPITAL, Shooters Hill, London, S.E. 18.
GENERAL HOSPITAL (112 beds.)

HOUSE PHYSICIAN, also HOUSE SURGEON.

The Appointments Committee invite applications for appointment as (*a*) House Physician and (*b*) House Surgeon. An honorarium of £125 per annum will be paid in respect of each appointment, which will be for a period of six months as from August 13th, 1929.

Applications, accompanied by copies of not more than three recent testimonials are invited from suitably qualified candidates, and should be addressed to the undersigned to reach him not later than 10 A.M. on Monday, July 15th, 1929.

EDWIN RADFORD, J.P., Secretary-Superintendent.

West London Hospital, Hammer-

smith-road, W.6. (225 Beds.)

Required, ONE AURAL and OPHTHALMIC HOUSE SURGEON and RESIDENT ASSISTANT CASUALTY OFFICER (Male). This appointment is tenable for a period of not less than five months from 1st August next, subject to one month's notice on either side. Salary at the rate of £100 per annum with board, lodging, and laundry allowance. Candidates must be registered under the Medical Act.

Applications (which must be made on printed forms obtained from me) must reach me not later than first post on 19th July. Candidates must call upon such members of the Medical Staff as directed and attend a Meeting of the Medical Council at 4 P.M. on Friday, 26th July, and the House Committee at 4.45 P.M. the same day, when the appointment will be made.

H. A. MADGE, Secretary.

£350 Surgical Scholarship.

The Association of Surgeons of Great

Britain and Ireland invite applications for a SURGICAL SCHOLARSHIP of the value of £350, to be held for one year. The object of the Scholarship is to enable the holder to pursue a definite line of research or to study in specified clinics, either at home or abroad.

Candidates in their applications are required to state the line of research or study that they intend to pursue and also to give a résumé of their past careers. No testimonials should be sent, but each candidate is required to provide letters of recommendation, to be forwarded under separate cover, from two sponsors.

The election will be made in November, 1929, and applications must be forwarded to the Secretary of the Association by September 30th, 1929.

E. C. HUGHES, Hon. Secretary.

The Association of Surgeons, 17, Wimpole-street, London, W.1.

Seamen's Hospital Society, Greenwich,

S.E.—RESIDENT MEDICAL OFFICER required at Queen Alexandra Memorial Hospital, Marseilles, for six months from 1st August. Salary £150 per annum, with board, residence, and laundry. Candidates must be male and know French. Applications, with copies of three recent testimonials, to be sent in by July 23rd to the undersigned, from whom further particulars can be obtained.

R. E. V. BAX, Secretary.

Greenwich, 1st July, 1929.

The Royal Waterloo Hospital for

CHILDREN AND WOMEN, Waterloo-road, S.E.1.

Applications are invited from qualified Male Practitioners for the following post vacant on the 1st August, 1929, a CASUALTY OFFICER to work in the Out-patient Department on weekdays at £150 per annum, lunch and tea provided. Applications with copies of testimonials, should be forwarded by Tuesday morning, July 16th, to the Secretary at the Hospital, from whom further particulars can be obtained.

The Willesden General Hospital,

N.W.10.

SURGICAL OUT-PATIENTS DEPARTMENT
CLINICAL ASSISTANT.

GYNÆCOLOGICAL OUT-PATIENTS DEPARTMENT
CLINICAL ASSISTANT.

Applications are invited for the above appointments for a period of six months from August 1st, 1929. The successful applicants will be expected to attend the Hospital regularly and to take charge of the Department when the Medical Officer is absent.

Applications should be addressed to the undersigned not later than Wednesday, 17th July, 1929, from whom full particulars of each appointment can be obtained.

R. J. HEARNE, Secretary.

Borough of Colne.

MEDICAL OFFICER OF HEALTH.

The Council invites applications for the appointment of Medical Officer of Health, School Medical Officer and Maternity and Child Welfare Medical Officer for the Borough.

The salary of the appointment will be £800 per annum, and a motor-car is provided for the use of the Health Department.

Candidates must be duly qualified medical practitioners, and possess a recognised diploma in Public Health and the requisite qualifications required by the Sanitary Officers Order, 1926, and the Regulations of the Ministry of Health, to whose approval the appointment will be subject.

Canvassing will disqualify a candidate.

Applications, accompanied by not more than three references or recent testimonials, must be sent to the undersigned endorsed "Medical Officer of Health," not later than Monday, 5th August, 1929. L. A. VENABLES, Town Clerk.

Town Hall, Colne, 1st July, 1929.

Cardiff Royal Infirmary.

Associated with Welsh National School of Medicine.

Applications are invited for the undermentioned posts:—
THREE HOUSE SURGEONS.
THREE HOUSE PHYSICIANS.
ONE HOUSE SURGEON—GYNÆCOLOGICAL.

Salary at the rate of £50 per annum with board and lodging. Appointments are for six months as from August 20th, 1929, with the exception of one House Surgeon who will be required to commence duties on July 20th, 1929, for a period of seven months.

Forms of applications can be obtained from the undersigned and should be returned, with copies of three recent testimonials, on or before July 29th, 1929. Applications for the seven months' appointment must be returned on or before July 15th, 1929.

R. H. ENOCH, Acting Medical Superintendent.

July 2nd, 1929.

City of Birmingham.

APPOINTMENT OF MEDICAL SUPERINTENDENT.

Applications are invited for the post of Medical Superintendent at the Mental Deficiency Institution shortly to be opened at Coleshill Hall, within about 10 miles reach of Birmingham.

Candidates must be fully qualified registered medical practitioners and have had experience in institutions for mental defectives.

Commencing salary £700 per annum and emoluments (including house, fuel, lighting, and laundry), valued at £200 for superannuation purposes. The appointment will be subject to three months' notice on either side, and the selected candidate will be required to join under the Asylums and Certified Institutions (Officers Pensions) Act, 1918.

Applications, stating age, medical qualifications and experience, accompanied by copies of not more than three recent testimonials, endorsed "Medical Superintendent, Coleshill Hall" should be addressed to the undersigned not later than 22nd August, 1929.

Canvassing will be deemed a disqualification.

F. H. C. WILTSHIRE, Town Clerk.

Council House, Birmingham.

ROYAL ARMY MEDICAL CORPS

25 COMMISSIONS in the ROYAL ARMY MEDICAL CORPS will be offered in July, 1929. Applications should reach the War Office not later than the 20th July.

Candidates will be selected for Commissions without competitive examination, and will be required to present themselves in London for interview and medical examination towards the end of July. They must be under twenty-eight years of age on 1st August, 1929, and registered under the Medical Acts.

Officers of the R.A.M.C. are liable to serve in any part of the world where British Troops are quartered.

Ample opportunities exist in the Army for clinical professional work, both Medical and Surgical, as well as for the study and practice of Hygiene, Pathology, and all the special branches.

The cost of Post-graduate study, which is compulsory, is met from Army Funds.

PAY AND ALLOWANCES.—Pay from £500 to £2,000 a year, according to rank and length of service.

Gratuities on retirement.—After 7 years' service £1,000
„ 15 „ „ £2,800
„ 18 „ „ £3,500

Current rates of retired pay range from £372 per annum, normally earned by a Major after 20 years' service, to £940 per annum, the maximum for which a Major-General is eligible.

The rates of pay and retired pay are subject to periodical variation consequent on fluctuation in the cost of living.

Outfit Grant.— An Officer on joining receives £50 as outfit allowance.

Marriage Allowance.—Officers of thirty years of age and over who are married are entitled to draw special rates of allowances.

A Voluntary Widows' and Orphans' Fund exists for Officers of the Corps.

All particulars may be obtained by application, in writing or personally, to THE UNDER SECRETARY OF STATE, The War Office (A.M.D.1.), Whitehall, London, S.W.1.

Nottingham General Hospital.
(377 Beds.)

A HOUSE SURGEON (Male) is required for the Ear, Nose and Throat Department (40 beds).

The appointment is for six months with salary at the rate of £150 a year, with board, residence, and laundry.

Candidates are desired to send applications, giving age, experience and qualifications, together with copies of testimonials, to the undersigned not later than Wednesday, July 17th.

The appointment will be made on July 24th, and the successful candidate will be expected to commence duty on Saturday, July 27th.

P. M. MACCOLL, House Governor and Secretary.

Nottingham General Hospital.
(377 Beds.)

A HOUSE SURGEON (Male) is required at the above Institution. The appointment is for six months, with salary at the rate of £150 a year, with board, residence, and laundry.

Candidates are desired to send applications, giving age, experience and qualifications, together with copies of testimonials, to the undersigned not later than Wednesday, July 17th.

The appointment will be made on July 24th, and the successful candidate will be expected to commence duty on Saturday, August 10th.

P. M. MACCOLL, House Governor and Secretary.

North Staffordshire Royal Infirmary,
Stoke-on-Trent. (350 Beds.)

The General Committee invites applications for the post of HOUSE SURGEON. Salary £150 per annum, with board, residence, and laundry.

The appointment will be for a period of twelve months. Applications to be sent to the undersigned immediately, together with copies of two or three recent testimonials. Preference will be given to candidates having had previous hospital experience. There are six residents, two medical, four surgical.

W. STEVENSON, Secretary and House Governor.

North Staffordshire Royal Infirmary,
Stoke-on-Trent. (350 Beds.) The General Committee invites applications for the post of HOUSE SURGEON for Ophthalmic and Aural Departments. Salary £150 per annum, with board, residence, and laundry. The appointment will be for six months, renewable. Applications to be sent to the undersigned immediately, together with two or three copies of recent testimonials. Preference will be given to candidates having had previous Hospital experience in Ophthalmic and Aural Departments. There are six residents, two medical, four surgical.

W. STEVENSON, Secretary and House Governor.

North Staffs Royal Infirmary, Stoke-on-Trent.

Royal Sussex County Hospital,
Brighton. (225 Beds.)

HOUSE SURGEON (Male) required about the middle of August, 1929, with charge of beds, part casualties, and anæsthetics.

Salary £150 per annum, with board, residence, ,and laundry.

Candidates must hold Medical and Surgical qualifications of the British Empire, and be duly registered under the Medical Acts.

They must be unmarried, and, when elected, under thirty years of age. Applications, with copies of testimonials, should be sent immediately to the undersigned.

L. L. W. LANCASTER-GAYE, Secretary-Superintendent.

The Royal Infirmary, Sheffield.

OPEN ELECTION.

A Vacancy having arisen in the post of SURGICAL REGISTRAR to the Royal Infirmary, Sheffield, the Weekly Board invite applications therefor.

Candidates must be Fellows of one of the Colleges, and the successful candidate will not be allowed to engage in general practice. The post is tenable for one year, and the holder will be eligible for re-election. The salary is £200 per annum.

Applications, stating age and qualifications, together with copies of testimonials, to be sent to the undersigned not later than 12th July next.

JNO. W. BARNES, F.C.I.S.,
General Superintendent and Secretary.

Board Room, 19th June, 1929.

The Royal Infirmary, Sheffield.
(500 Beds.)

OPEN APPOINTMENTS.

The Weekly Board of Management invite applications for the four undermentioned posts:—

ASSISTANT CASUALTY OFFICER,
HOUSE SURGEON,
OPHTHALMIC HOUSE SURGEON, and
ASSISTANT OPHTHALMIC HOUSE SURGEON.

The appointments will be tenable for six months from 1st July, 1929. The salary attached to each appointment is £80 per annum, with board and residence. Applications, with copies of testimonials, to be sent to the undersigned immediately.

JNO. W. BARNES, F.C.I.S.,
General Superintendent and Secretary.

Board Room, 19th June, 1929.

Macclesfield General Infirmary
(100 Beds).—Wanted RESIDENT HOUSE SURGEON. Salary £180 per annum with board and residence. Candidates must be fully qualified and registered.

Applications, with copies of testimonials, to be sent to the undersigned. A. E. HANRAHAN, Secretary.

Buchanan Hospital, St. Leonards-on-
Sea.—HOUSE SURGEON (Male) as Locum Tenens required at once, to take over duties on July 16th. Salary £250 per year.

Applications to be made to the Secretary. Also at end of September, two vacancies for House Surgeons (Male).—Apply, with testimonials, to the Secretary.

Birmingham & Midland Homœopathic
HOSPITAL AND DISPENSARY, Easy Row, Birmingham.—A vacancy occurs for the post of HOUSE SURGEON at the above Hospital, on August 1st, 1929. Salary £150, with board, residence, and laundry.

Applications, stating age and qualifications, accompanied by three recent testimonials, should be sent to the Secretary at the Hospital at once.

Swansea Hospital. (316 Beds.)

HOUSE SURGEON wanted. Gentleman, single.

Salary £150 with board, residence, and laundry. Duties to commence 1st August.

Applications, stating age, nationality, qualifications, and experience, with copies of three recent testimonials, to be forwarded to the undersigned.

O. C. HOWELLS, Secretary.

Durham County Hospital.

The post of JUNIOR HOUSE SURGEON will be vacant on 1st August, 1929. The appointment will be for six months. Candidates must be male, and duly qualified and registered.

75 beds. Salary £120 per annum with board and lodging. Applications with copies only of testimonials to be sent not later than July 15th to WM. R. WILSON, Secretary.

79, Saddler-street, Durham.

Liverpool Open-air Hospital for
CHILDREN, Leasowe.—260 beds. Surgical Tuberculosis and Orthopædics.—Vacant, the post of JUNIOR RESIDENT MEDICAL OFFICER. Salary, £200 with residence, board, and laundry. Tenable for six months as Junior and a further six months as Senior Resident.

Applications, with copies of testimonials, to be sent to the Senior Medical Officer not later than Saturday, July 5th.

General Hospital, Great Yarmouth.
(72 Beds.)

Applications are invited for the post of JUNIOR HOUSE SURGEON. Salary £100 per annum, with board, residence, and laundry. Candidates (Male and unmarried) must be fully qualified and registered.

Applications, stating age, nationality, and qualifications, together with copies of three recent testimonials, to be sent immediately to the undersigned.

T. H. G. GARTLAND, Secretary.

The Staffordshire General Infirmary,
Stafford.—Applications are invited for the post of HOUSE SURGEON. (Male). Salary at the rate of £200 per annum, with board, lodging, &c. Candidates must be fully qualified and registered. The appointment to be held for at least six months.

Applications, stating age, qualifications, and experience, accompanied by copies of three recent testimonials, should reach the undersigned not later than Thursday, the 11th inst.

A. E. COLLINS, Secretary.

Stafford, July 2nd, 1929.

Napsbury Mental Hospital, Napsbury,
St. Albans, Herts.

COUNTY COUNCIL OF MIDDLESEX.

MALE JUNIOR ASSISTANT MEDICAL OFFICER required. Salary £485 per annum, rising by £10 per annum to £525. Deductions for board, lodging, washing and attendance, £120 per annum. Appointment is subject to the Asylum Officers' Superannuation Act, 1909. Applications, with copies of testimonials, to the Medical Superintendent.

Royal Devon and Exeter Hospital,
Exeter. (225 Beds.)

ASSISTANT HOUSE SURGEON (Male).

Applications are invited for the post of Assistant House Surgeon at this Hospital now vacant. The appointment is for six months, but candidates are eligible for re-election.

The duties include assisting in the Ear, Nose, Throat, Radiological and Casualty Departments, and the giving of anæsthetics.

Salary at the rate of £100 per annum, with board, apartments, and washing.

Applications, giving particulars as to age and qualifications, together with copies of three recent testimonials, should be sent to the undersigned as soon as possible.

By order of the Committee,
June 4th, 1929. S. S. COLE, Secretary and Manager.

Rhondda Urban District Council.

ASSISTANT MEDICAL OFFICER.

The above Council invite applications from Male registered Medical Practitioners to act as whole-time Assistant Medical Officer of Health and Assistant School Medical Officer, under the direction, supervision and control of the Council's Medical Officer of Health, at a salary of £600 per annum, together with travelling expenses necessarily incurred in the performance of the duties.

Candidates must have had not less than three years' professional experience subsequent to registration, and the possession of a Diploma in Public Health is desirable.

The duties will pertain to both public health and school medical services, but experience in the work of school clinics, including the examination and certification of defective children, orthopædic work, and the prescription of glasses for errors of refraction, will be considered to be a special importance.

The appointment will be subject to two calendar months' notice on either side, and to the approval of the Board of Education. The Officer appointed will be required to reside within the Rhondda Urban District and will not be allowed to engage in private practice.

Canvassing by or on behalf of candidates will be considered to be a disqualification.

Applications are to be made on forms obtainable from the Medical Officer of Health, Tydfil House, Llewelyn-street, Pentre, Rhondda, by whom they must be received, endorsed "Assistant Medical Officer" and accompanied by copies of three recent testimonials, not later than the first post on Wednesday, the 17th July, 1929. D. J. JONES, Clerk of the Council.

The Council Offices, Pentre, Rhondda, 29th June, 1929.

County Council of Middlesex.

TUBERCULOSIS MEDICAL OFFICER.

The County Council invite applications for the post of Tuberculosis Medical Officer. Salary £750 per annum, rising by annual increments of £50 to £1000 (no bonus), together with out-of-pocket travelling expenses.

Candidates must be registered Medical Practitioners of not less than twenty-five years of age, who have held resident appointment in a general hospital for at least six months, and have had special practical experience in the diagnosis and treatment of Tuberculosis in Sanatoria or otherwise.

The Officer appointed will be required to devote his whole time to his official duties, to work under the administrative control of the County Medical Officer of Health, to reside in such district as may be required, to pass such medical examination as the County Council may direct, and to contribute to the County Council's Superannuation fund.

The duties will include the charge of tuberculosis dispensaries, the general arrangement for the treatment of tuberculosis patients otherwise than in sanatoria, and such other duties of a similar nature as the Council may direct.

The appointment will commence on 1st October, 1929, will be during the pleasure of the Council, and subject to one month's notice on either side.

Applications, setting out (1) age, (2) qualifications, (3) experience, and (4) past appointments, together with copies of three recent testimonials, must be received by the undersigned not later than 13th July, 1929. No special application forms are provided. Canvassing will disqualify. ERNEST W. S. HART, Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1, 24th June, 1929.

Birmingham Union.

SELLY OAK HOSPITAL.

CASUALTY OFFICER (Male).

Applications are invited from fully qualified Medical Practitioners for the appointment of Casualty Officer (Male) at the Selly Oak Hospital, Birmingham.

The present hospital accommodation is 550 beds divided into General Medical, General Surgical, Gynæcological, Obstetrical, Children and Infectious sections. There is a completely equipped Pathological Laboratory, also X Ray, Electro-Therapeutic, Massage and Sunlight Departments. Over 2500 operations are performed annually.

The appointment will be for a period of six months in the first instance, but may be extended at the end of that time.

The person appointed will be required to assist at operations, administer anæsthetics, and undertake casualty work, and such other duties as may be assigned to him by the Medical Superintendent; and should occasion arise, to assist at any of the other Institutions under the control of the Guardians.

The salary attached to the appointment is at the rate of £200 per annum, together with full residential emoluments (rations, apartments, laundry, and attendance).

A deduction of 2 per cent. will be made from the salary and value of emoluments under the provisions of the Poor Law Officers' Superannuation Act, 1896, and for this purpose the emoluments are valued at £200 per annum.

Further particulars of the appointment may be obtained from the Medical Superintendent, Mr. R. P. S. Kelman, M.B., F.R.C.S. (Eng. and Edin.), at the Selly Oak Hospital.

Applications, stating age, experience, and qualifications, accompanied by copies of recent testimonials, must be forwarded so as to reach me not later than Friday, 12th July, 1929.

C. P. BEECH, Clerk to the Guardians.

Union Offices, Edmund-street, Birmingham, June 21st, 1929.

Rotherham Hospital. — Wanted.

A SENIOR HOUSE SURGEON (Male), qualified. A knowledge of Eye work is desirable. Salary £200, with board lodgings, and washing.

Applications, with copies of recent testimonials, to be sent to the Secretary, G.W. ROBERTS, 8, Moorgate-street, Rotherham.

Lowestoft and North Suffolk Hospital.

HOUSE SURGEON (Male), preferably with knowledge of "X-Ray." Salary £120 per annum, with board, residence, and laundry.

Applications, with copies of three recent testimonials, to the Honorary Medical Superintendent.

Assistant Medical Officer (Male)

wanted at HAWKHEAD ASYLUM, Glasgow. Previous asylum experience unnecessary, but preference will be given to one who has engaged in pathological work or has been house physician. Ample opportunity afforded for research. Salary commences £275 with board, lodging, and laundry.

Full particulars on application to the Medical Superintendent, DR. J. H. MACDONALD.

Ancoats Hospital, Manchester.

RESIDENT MEDICAL OFFICER required to commence duty on 1st August next. Salary £150 per annum, with board, residence, &c. Previous experience in a similar position preferred.

Applications, stating age, qualifications, previous experience (including appointments held), together with copies of three recent testimonials, to be forwarded to the undersigned on or before 10th July next.

FORTHCOMING VACANCIES.

HOUSE PHYSICIAN. Six months' appointment from 1st September.

HOUSE SURGEON (Orthopædic). Six months' appointment from 1st September.

By order of the Board.

HERBERT J. DAFFORNE, Gen. Supt. and Secretary.

City and County of Newcastle-upon-Tyne.

CITY HOSPITAL FOR INFECTIOUS DISEASES.

RESIDENT MEDICAL ASSISTANT (MALE).

Wanted immediately, a Resident Medical Assistant (Male) who holds a registrable qualification in Medicine and Surgery (and preferably also in Public Health), and possesses a practical knowledge of Bacteriology.

Salary £350 per annum, with board, lodgings, &c.

Applications, stating age, qualifications, and previous experience, to be forwarded with copies of not more than three recent testimonials to the Medical Officer of Health, Town Hall, Newcastle-upon-Tyne.

25th June, 1929.

Kesteven Mental Hospital, Sleaford, Lincolnshire.

Appointment of MEDICAL SUPERINTENDENT.

A Medical Superintendent is required for the above Mental Hospital at a commencing salary of £700 per annum, with furnished house, coals, light, and washing (the emoluments for superannuation purposes to be valued at £200 per annum). Duties to commence on 1st September next.

The successful candidate will be expected to act as Medical Advisor under the Mental Deficiency Acts, for which an additional salary of £52 per annum will be paid.

Applications, endorsed "Medical Superintendent," stating age, qualifications, and experience, accompanied by two recent testimonials, to be sent to me on or before the 15th day of July, 1929.

A. D. PIPER, Clerk to the Mental Hospital Visiting Committee.

County Offices, Sleaford, 24th June, 1929.

The Welsh National School of Medicine.

The Board of Medicine invite applications for the following posts:—

(*a*) JUNIOR ASSISTANT in the Medical Unit. The appointment is a probationary one for a period not exceeding three years, beginning in October next, and the salary is £500 per annum.

(*b*) JUNIOR ASSISTANT in the Surgical Unit. The appointment is a probationary one for a period not exceeding two years, beginning as soon as possible, and the salary is £350 per annum.

(*c*) ASSISTANT LECTURER in PATHOLOGY at a salary of £500 per annum. The appointment will be made as from October next.

The person appointed in each case will be required to devote his whole time to the duties of the office.

Further particulars may be obtained from the undersigned, by whom applications, accompanied by not more than four testimonials, must be received on or before July 15th, 1929.

Sixty typewritten copies of applications and testimonials are required.

D. J. A. BROWN, Secretary.

University College, Cardiff, June 24th, 1929.

Romford Isolation Hospital.

The Romford Joint Hospital Board invite applications from registered medical practitioners (Male) for the appointment of MEDICAL SUPERINTENDENT of the Hospital at Rush Green, Romford, which is to be enlarged to 150 beds.

The salary is £750 per annum, and in addition a temporary allowance of £250 per annum in lieu of board-residence will be made pending the provision of residential quarters.

Candidates must have held a resident post in a recognised Fever Hospital, and be experienced in the modern treatment of all the infectious diseases now treated in Isolated Hospitals.

Applications, stating nationality, age, and previous experience, together with copies of three recent testimonials, to be sent, not later than July 20th next, to the Clerk to the Board, who will furnish further particulars on request.

By order of the Board,
T. W. A. GREENHALGH, Clerk.

16A, South-street, Romford, 2nd July, 1929.

Devonshire Hospital, Buxton.

Derbyshire. (300 Beds.)
(A SPECIAL HOSPITAL FOR RHEUMATISM AND ALLIED DISEASES.)

ASSISTANT HOUSE PHYSICIAN.—The Committee invite applications for this post. To commence duties 1st August, 1929. The successful candidate will be engaged for a period of not less than six months. The appointment is not open to ladies. Salary commencing £150 per annum, rising to £175 after three months' service, with furnished apartments, board (excepting stimulants), and laundry. Applications, with copies of three recent testimonials, endorsed "Assistant House Physician," to be sent in at once. The medical Staff consists of eight Honorary Physicians, an Honorary Surgeon, a Bacteriologist, a Radiologist, a Biochemist, and two Resident House Physicians. The Hospital contains a Pathological Laboratory, and X Ray Department. This appointment offers special facilities for anyone preparing a thesis or wishing to do research work.

Canvassing will disqualify.

By order.
TOM B. HARRISON,
General Superintendent and Secretary.

University of Birmingham.

WALTER MYERS TRAVELLING STUDENTSHIP.

(For Research in any branch of Pathology approved by the Selection Committee.)

The Walter Myers Travelling Studentship is of the value of £300 for one year and is tenable at a University or Hospital not in Great Britain or Ireland approved of by the Selection Committee.

The Studentship is available for year 1929–30.

Candidates, who must be under thirty years of age, may be of either sex and must be graduates of the University of Birmingham or of some other University in Great Britain or Ireland. In the case of graduates of other Universities candidates must have been students of the Birmingham Medical School for three years immediately preceding their application for the Studentship.

The holder of the Studentship will be required to devote his or her whole time to research.

Further information may be obtained from the Dean of the Medical Faculty, University, Edmund-street, Birmingham. Applications must be lodged with the Dean not later than September 2nd, 1929. C. G. BURTON, Secretary.

Bristol Royal Infirmary.

Applications are invited for the following resident appointments for the six months commencing September 1st, 1929.

2 HOUSE PHYSICIANS,
4 HOUSE SURGEONS,
1 HOUSE PHYSICIAN to the Cancer Research Dept.,
1 HOUSE SURGEON to the Ear, Nose and Throat Dept.,
1 HOUSE SURGEON to the Gynæcological and Ophthalmic Depts.,
1 OBSTETRIC HOUSE PHYSICIAN,
1 CASUALTY HOUSE SURGEON,
1 ASSISTANT HOUSE SURGEON and H.S. to the Dermatological Dept.

Salary at the rate of £60 per annum with board, apartments, and laundry, except in the case of the Casualty House Surgeon, when the salary will be at the rate of £80 per annum with board, apartments, and laundry.

DENTAL HOUSE SURGEON.

If resident, salary at the rate of £80 per annum, but if non-resident, salary at the rate of £116 per annum with board.

Candidates, who must be duly qualified, to send in their applications, stating age, together with copies of not more than three testimonials to the undersigned on or before Saturday, July 20th, 1929.

ELLIS C. SMITH, F.C.I.S.,
Secretary and House Governor.

Bristol Royal Infirmary.

Applications are invited for the post of SENIOR RESIDENT MEDICAL OFFICER. The appointment to date as from September 1st next. Salary at the rate of £200 per annum, together with board apartments, and laundry. Candidates, who must be qualified, to send in their applications, stating age, together with copies of not more than three testimonials to the undersigned on or before Saturday, July 20th, 1929.

ELLIS C. SMITH, F.C.I.S.,
Secretary and House Governor.

Goculdas Tejpal Hospital, Bombay.

APPOINTMENT OF HONORARY SURGEON.

Applications are invited for the above appointment. Goculdas Tejpal Hospital (266 beds) is associated with the Grant Medical College, Bombay, for clinical teaching of undergraduates. The appointment carries an honorarium of Rs.150 per mensem and will be for a period of five years, subject to termination by three months' notice on either side.

Applications, in duplicate, marked "Honorary Surgeon," stating age, qualifications, and experience, together with copies of three recent testimonials, must be sent so as to reach the undersigned not later than the first week in August.

F. N. MOOS, M.D. Lond., Superin., G.T. Hospital, Bombay.

West African Medical Staff.

Vacancies exist at present for PATHOLOGISTS in NIGERIA.

The selected officers will be appointed to the West African Medical Staff on three years' probation, and if confirmed at the end of that period will be placed on the permanent and pensionable establishment.

Salary £800 a year, rising by annual increments of £40 to £960 a year, together with a seniority allowance (payable only in West Africa) of £72 a year, and staff pay at the rate of £150 a year, half of which is payable during leave. After three years' service at £960 a year officers may, if recommended, on passing an approved course of study, be placed on the scale £1000 a year rising by annual increments of £50 to £1150 a year, together with seniority allowance at the rate of £100 a year and staff pay as before.

Free quarters are provided, or an allowance is given in lieu.

Free first-class passages are provided on first appointment, and when proceeding on or returning from leave.

A tour of service in West Africa lasts from 12 to 18 months at the discretion of the Colonial Government, followed by leave in in this country at the rate of one week for each completed month of residential service. Leave begins on the date of arrival in England.

Further particulars and forms of application may be obtained on application in writing to the Private Secretary (Appointments), Colonial Office, 2, Richmond-terrace, Whitehall, S.W.1.

Union of South Africa.

BLOEMFONTEIN HOSPITAL.

SISTER IN CHARGE OF X RAY AND ELECTRICAL DEPARTMENT.

Applications are invited for the above-mentioned post. Candidates must be fully qualified in :—

(1) Radiography, and
(2) Massage and Medical Gymnastics and Medical Electricity.

Salary £300 per annum, plus £13 16*s.* per annum washing allowance, with free quarters and board.

Duty.—Candidates should state the earliest date on which they can assume duty.

Applications, together with copies of testimonials, all in duplicate, must reach the Secretary, Office of the High Commissioner for the Union of South Africa, Trafalgar Square, W.C. 2 (from whom forms of application may be obtained), not later than 17th July, 1929.

St. Mary's Hospitals, Manchester.

Two HOUSE SURGEONS for the Whitworth Street West Hospital (Maternity); and two for the Whitworth Park Hospital (one Children's Department and one Gynæcological Department), each for a period of six months from the 1st August next. Salaries at the rate of £50 per annum, with board and residence. Applications, with copies of three testimonials, to be sent to the undersigned on or before the 10th July.

R. RATCLIFFE, Secretary.

City & County of Kingston-upon-Hull.

HULL MATERNITY HOME AND INFANTS' HOSPITAL.

RESIDENT MEDICAL OFFICER (WOMAN).

The Corporation of Hull invite applications from unmarried or widowed registered Medical Practitioners, under the age of forty years, for the appointment of Resident Medical Officer (Woman) at the Maternity Home and Infants' Hospital, Hedon-road, Hull. Candidates must be of at least three years' standing in their profession.

Salary £450 per annum, together with board, washing, and residence at the Maternity Home. The appointment is subject to the provisions of the Local Government and Other Officers' Superannuation Act, 1922.

Applicants must have had post-graduate experience in obstetrics, pædiatrics, and the treatment of venereal disease in women.

The successful candidate will be required to devote the whole of her time to the duties of the appointment, which will also include attendance, when required, at Ante-Natal, Post-Natal, and other clinics.

Particulars of the duties and forms of application may be obtained from the undersigned.

Complete applications (in an envelope endorsed "Resident Medical Officer, Maternity Home,") together with copies of three recent testimonials, must be received not later than Thursday, the 18th July, 1929. W. ALLEN DALEY, Medical Officer of Health.

Health Department, Guildhall, Hull, 1st July, 1929.

INDIAN MEDICAL SERVICE

RECRUITMENT OF EUROPEAN OFFICERS

Applications are invited from Medical Men for permanent commissions in H.M.'s Indian Medical Service. The terms offered include a gratuity of £1,000 on retirement after six years' service or £2,500 after 12 years' service, together with free return passages for those who no longer desire to remain in the Service. In other respects the terms will be as detailed below.

Candidates must be British subjects under 32 years of age at the time of application and must be registered under the Medical Acts in force in Great Britain and Northern Ireland.

CAREERS.

The Indian Medical Service offers wide opportunities of medical experience, including clinical, preventive, specialist, and research work. At the beginning of his career an officer is employed on the military side which has medical charge of the Indian Army. Promotion is on a time scale up to the rank of Lieutenant-Colonel, and by selection to the ranks of Colonel and Major-General. An officer may apply after two years' Indian Service for transfer to the civil side, from which appointments are made to Civil Surgeoncies, which are established at the principal civil centres to provide for the medical needs of Civil Officials and for general medical administrative purposes; to specialist (e.g., Public Health and Bacteriological) services; to research posts; and to professorships at the Medical Schools.

PAY.

The monthly rates of pay for European officers in the Service who have a "non-Asiatic" domicile are as follows:—

Rank.	Service in Rank.	Basic Pay.	Overseas Pay.	Year of Total Service.
1	2	3	4	5
		Rs.		
Lieut...	—	500	Rs.150	1st
			150	2nd
			150	3rd
Capt...	(i) During first 3 years' service as Captain ..	650	150	4th
			£15	5th
			15	6th
	(ii) With more than 3 and less than 6 years' service as Captain	750	25	7th
			25	8th
			25	9th
	(iii) With more than 6 years' service as Captain	850	25	10th
			25	11th
			30	12th
Major..	(i) During first 3 years' service as Major ..	950		
	(ii) With more than 3 and less than 6 years' service as Major	1100		
	(iii) With more than 6 years' service as Major..	1250		
Lt.-Col.	(i) Until completion of 23 years' total service ..	1500	30	13th and over.
	(ii) During 24th and 25th years' service	1600		
	(iii) After completion of 25 years' total service ..	1700		
	(iv) When selected for increased pay	1850		

Extras.—In addition to the above rates various allowances are admissible for a large number of special appointments on both the military and the civil side which may be held by members of the Indian Medical Service. Special high rates of pay are also attached to the numerous administrative appointments open to officers in both branches of the Service.

WAR SERVICE CONCESSIONS.

Any service rendered by an officer during the War as a medical or combatant officer or in a position usually filled by an officer may be counted as service for increments of pay, promotion, retirement and retired pay, but not for gratuity.

One half of any service in the ranks during the War may be counted as service for retirement and retired pay only.

OUTFIT ALLOWANCE.

Officers on appointment will receive an outfit allowance of £50.

PRIVATE PRACTICE.

With the exception of Administrative Officers, military or civil, and officers holding certain special appointments, officers are not debarred from taking private practice, so long as it does not interfere with their proper duties.

PENSIONS.

The rates of pension are as follows:—

	Per annum.
After 17 years' service for pension	£400
" 18 " "	430
" 19 " "	460
" 20 " "	500
" 21 " "	540
" 22 " "	580
" 23 " "	620
" 24 " "	660
" 25 " "	700
" 26 " "	750
" 27 " "	800

These rates are subject to alteration on account of a rise or fall in the cost of living as compared with the year 1919, to an extent not exceeding 20 per cent. in all, the revision being undertaken triennially. With effect from July 1st, 1927 a reduction of 4½ per cent. has been made on this account from the amounts shown.

There are additional pensions ranging from £65 to £350 per annum for officers who have held administrative appointments.

PASSAGES.

An officer on appointment is provided with a free passage to India. The wives and families of officers who are married prior to the date of the officers' embarkation on first appointment will also be provided with free passage to India subject to the payment of messing charges.

Officers and their families are also eligible for passage concessions under which they are granted a certain number of return passages home at Government expense during their service.

INSTRUCTION PRIOR TO EMBARKATION.

Officers are required to undergo courses of instruction at the Royal Army Medical College and at Aldershot, lasting approximately six months, prior to their embarkation for India on first appointment.

Full details regarding these appointments and forms of application may be obtained from the UNDER-SECRETARY OF STATE FOR INDIA, MILITARY DEPARTMENT, INDIA OFFICE, LONDON, S.W.1. Applications should be submitted as soon as possible. The Selection Committee will meet early in July to make nominations, and the selected candidates will be required to attend a course of instruction commencing on the 6th August, 1929.

Burton-on-Trent General Infirmary.

HOUSE SURGEON.

The Committee require the services of a duly qualified Second Resident House Surgeon (Male). Salary £150, with board and furnished quarters. Duties to commence August 1st.

Applications, stating age and experience, and accompanied by copies of testimonials, to be sent to the undersigned.

E. W. THORNLEY, Secretary.

The Infirmary, Burton-on-Trent.

Shropshire Orthopædic Hospital and AGNES HUNT SURGICAL HOME, Oswestry.

HOUSE SURGEON (Male) required. Appointment for one year. Salary £200 per annum, with board, residence, laundry, and four weeks' holiday.

Applications, stating age, with copies of three recent testimonials, should be received by the Secretary-Superintendent, Shropshire Orthopædic Hospital, Oswestry, not later than first post on Saturday, July 20th, 1929.

The Sheffield Royal Hospital (340 beds).

There will be a vacancy on the Resident Staff on August 1st for an OPHTHALMIC HOUSE SURGEON (Male). The appointment will be for a period of six months and the selected candidate will be eligible for re-appointment or appointment to another office on the resident staff. Salary £80 per annum with board, residence, and laundry. Applications, with copies of testimonials, should be sent as soon as possible to

W. H. BOOTH, Superintendent and Secretary.

2nd July, 1929.

Chester Royal Infirmary. (211 Beds.)

Wanted, HOUSE SURGEON (Male) to the Ear, Nose and Throat Department and Casualty Officer, to commence duties on the 1st August, 1929. Salary £120 per annum, with board, lodging, and washing. Candidates must be doubly qualified and registered. Applications, stating age, and accompanied by copies of testimonials, to be sent to the undersigned not later than 18th July, 1929.

J. ROWSE MITCHELL, Secretary.

2nd July, 1929.

The Gloucestershire Royal Infirmary AND EYE INSTITUTION, Gloucester, (145 Beds).

Applications are invited for the post of SECOND HOUSE SURGEON (Male). Salary £100 per annum, with board, residence, and laundry. (Four Resident Medical Officers.)

The appointment is for six months, which may be extended for similar periods by re-election from time to time.

Applications, stating age, qualifications, and nationality, with copies of not less than three recent testimonials, must be received by the undersigned not later than Wednesday, July 10th. The elected candidate will be required to enter upon his duties at once.

F. J. SYMONS, Secretary.

2nd July, 1929.

The Devon Mental Hospital, Exminster, near Exeter (1400 Beds.)

Required, JUNIOR ASSISTANT MEDICAL OFFICER (Male). Candidates must be registered Medical Practitioners, and unmarried. Preference will be given to candidates who either have or are anxious to obtain a Diploma in Psychological Medicine.

The Hospital is fully equipped with Operating Theatre, X ray Installation, Bacteriological Laboratory, &c. Salary £300 per annum, rising by £25 per annum to £350, with board, apartments, laundry, and attendance.

The appointment is subject to the provisions of the Asylums Officers' Superannuation Act, 1909. Form of application to be obtained from the Clerk to the Devon Mental Hospital, Exminster, which must be completed and returned on or before July 29th, 1929.

Tunbridge Wells and Counties General HOSPITAL.

Wanted, HOUSE SURGEON (Male). Candidates must be unmarried and duly qualified in Medicine and Surgery. (Two Residents). Vacant July 27th, 1929. May be required to lecture to the Nursing Staff.

In-patients number over 1400 yearly. Out-patients 6000 with 50,000 attendances.

Salary £160 per annum, with board, residence, &c., in the Hospital.

This Hospital is approved by the University of London for the purposes of the M.D. and M.S. examinations.

Applications, stating qualifications, with certificate of registration and copies of testimonials, should be sent to the undersigned on or before July 8th.

J. J. WEBB, Secretary.

Ilford Emergency Hospital, Essex

(70 beds).—Wanted, SENIOR and JUNIOR HOUSE SURGEON (Male, unmarried). Medical and Surgical qualifications. Salary £110 and £100 per annum respectively, with apartments, board, and laundry. Applications, stating age, qualifications, and experience, with copies of testimonials, should be sent to the Secretary immediately.

Royal Hampshire County Hospital, Winchester.

RESIDENT HOUSE SURGEON, Male, required as soon as possible. Must be of British nationality. Salary £150 per annum, **board, lodging, and attendance provided.**

Candidates must be duly qualified and registered. Applications, stating age and enclosing copies of recent testimonials, should be sent to the undersigned as soon as possible.

HERBERT MASLEN, Secretary.

The Children's Hospital, Sheffield.

(East End Branch Out-patient Department.)

Wanted, JUNIOR HOUSE SURGEON (Female), qualified and registered. Salary £100 per annum. Duties to commence at once. Applications and copies of testimonials to be addressed to the undersigned as early as possible.

Western Bank, Sheffield. GEO. M. GILL, Secretary.

West Kent General Hospital, Maidstone.

APPOINTMENT OF HONORARY ANÆSTHETIST.

Applications are invited for the post of Honorary Anæsthetist at the above Hospital. Applications stating qualifications and accompanied by copies of recent testimonials should be sent to the undersigned, on or before, July 19th, 1929.

EDWARD J. GREGG, House Governor and Secretary.

Ancoats Hospital, Manchester.

ASSISTANT PATHOLOGIST (part time). Salary £200 per annum. Lady or Gentleman. Appointment for twelve months. Applications, stating age, experience, and appointments held, together with copies of three recent testimonials, to be forwarded not later than July 9th, 1929, to the undersigned.

HERBERT J. DAFFORNE,
General Superintendent and Secretary.

East Suffolk and Ipswich Hospital, Ipswich. 260 Beds. 7 Residents.

Wanted at once a HOUSE SURGEON (Male) (British). Salary at the rate of £120 per annum, six months' contract, with board, residence, and laundry.

Applications, stating age, qualifications and experience, and accompanied by copies of three recent testimonials, to be sent to the undersigned.

ARTHUR GRIFFITHS, Secretary.

The Hospital, Ipswich, 6th July, 1929.

Pathological and Bacteriological

LABORATORY ASSISTANTS' ASSOCIATION.—Pathologists and Bacteriologists requiring Skilled Certificated LABORATORY ASSISTANTS are invited to communicate with H. GOODING, Hon. Secretary, "Moelfre," 10, Holbeck Grove, Victoria Park, Manchester. No fees.

Indoor Assistant required for General

practice. Salary according to experience.—Address, No. 597, THE LANCET Office, 423, Strand, W.C.2.

Viennese Lady (19) entering Univer-

sity, speaking English fluently, desires 3 to 6 months position *au pair* with family good social standing. Gives German, French conversation, coaching Latin, and other school subjects.—Write, Dr. Dinolt, Nussdorfesstrasse 4, Vienna, Austria.

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Applications, giving full particulars, accompanied by copies of three testimonials, should be addressed to the Chairman of Directors, Evans Sons Lescher & Webb, Ltd., 56, Hanover-street, Liverpool.

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Would give German lessons, translate, assist in household and practice.

London preferred.

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Lady Secretary requires Post to Doctor, DENTIST or NURSING HOME. Many years' experience.)—Address, No. 591, THE LANCET Office, 423, Strand, W.C.2.

London, N.—Old-established mixed PRACTICE, average receipts £700 a year, fair panel. Very nice house for sale but might be rented. Premium £1200. Vendor going abroad.—Apply, Peacock & Hadley, Ltd., 19, Craven-street, Strand, W.C.2.

For Disposal.—Surgery, N.W. district, established over a year. Takings over £300 last 12 months. Small panel recently started. Consultations 1s., visits 2s.6d. upwards. Ill-health cause of selling. Price £250 for prompt sale.—Address, No. 595, THE LANCET Office, 423, Strand, W.C.2.

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The North-Western Medical Agency, LTD., 9, Whitmore-road, Fallowfield, Manchester, offer their SERVICES to Medical and Dental Practitioners for the Sale, Purchase, and Transfer of Practices and Partnerships. Locums and Assistants supplied at short notice. Accountancy.

Gentlemen requiring posts as LOCUMS or ASSISTANTS should apply to the above. Telephone: Rusholme 2269.

South Coast.—Well-known Town.— Old-established PRACTICE. Receipts over £600 a year, have been far more. Panel 200. Good house on lease. Premium £1100, or near offer. Vendor desires change.—Apply, Peacock & Hadley, Ltd., 19, Craven-street, Strand, W.C.2.

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Exceptionally fine Consulting Rooms available.—Call or write 14, Wimpole-street, W.1.

Consulting Rooms to Let, Harley-street and district, whole or part time. Lists sent on application.—Elgood & Co., 10, Henrietta-street, Cavendish-square, W.1. Tel.: Mayfair 5659.

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M.R.C.P., M.B.. B.S., etc. (Lond.), Bart.'s man. Ample hospital and clinical experience, including 8 years coaching in medicine in London, requires a billet.—Address, No. 599, THE LANCET Office, 423, Strand, W.C. 2.

Preston and County of Lancaster QUEEN VICTORIA ROYAL INFIRMARY.

The Board of Management invite applications from unmarried gentlemen, doubly qualified and registered, for the post of HOUSE PHYSICIAN. Duties in Medical, Maternity and Eye and Ear Wards. Six months' appointment.

Salary £150 per annum, with board, residence, and laundry. Applications, stating age, qualifications, and experience, together with copies of recent testimonials, to be forwarded to the undersigned at once.

JOHN GIBSON, Superintendent and Secretary.

Royal Infirmary, Preston.
2nd July, 1929.

West London Hospital, Hammersmith-road (275 Beds).—Required, one RESIDENT ANÆSTHETIST for period of not less than five months from 1st August next. Subject to one month's notice on either side. Salary at the rate of £100 per annum with board, lodging, and laundry allowance. Candidates must be registered under the Medical Act. Applications (in quadruplicate) giving full details, age, experience, qualifications, &c., and accompanied by copies of testimonials, must reach me not later than first post on Tuesday, 23rd July. Candidates must call upon such members of the Medical Staff as directed, and attend a meeting of the Medical Council at 4 P.M. on Friday, 26th July, and the House Committee's Meeting at 4.45 P.M. the same day, when the appointment will be made. H. A. MADGE, Secretary.

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Beds.—About £600 p.a. Visits 3/6 to 10/-. Good house, 6 bed., &c. Large garden, tennis, &c. Rent £80. Prem. £700 or offer.—No. 8480.

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Leicestershire.—About £700 p.a. Panel 500. Few mids. Visits 4/6. Good house, 4 bed., &c., to rent. Sep. surgery. Prem. £950.—No. 8469.

N. W. Coast Town.—Over £3000 p.a. Old-established. Panel over 1500. Usual fees. Medium house to rent.—No. 8465.

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1. KENT.—Favourite Coast Town.—PARTNERSHIP.—Non-dispensing. A one-third share (to commence) in an old-estab. chiefly better-class Practice, averaging, for the past three years, over £3000 p.a. Fees 5s. to 21s. Only about 10 Midwiferies at from 3 to 10 gns. Very good house with 4 reception, 6 bedrooms, usual offices. Garden. Large garage. Price for freehold £3000, half on mortgage. Premium 2½ years' purchase.
2. SURREY.—Hospital Town.—PARTNERSHIP.—A one-fourth share (to commence) in an old-estab. good mixed Practice. Average gross cash receipts £1400, including panel of 2000, and appts. worth £500 p.a. Fees 3s. 6d. to 21s. Suitable house can be obtained. Premium 2 years' purchase. Purchaser should be about 30 years of age and a good surgeon.
3. SOUTH-WEST COUNTY.—PARTNERSHIP.—Good residential district near large town. A one-fourth or one-third share (with increase up to one-half later) is for disposal in an old-estab. and steadily increasing Practice. Average gross cash receipts for past three years over £3000, of which £900 is from panel and about £100 from appts. Fees 3s. 6d. to 42s. Cottage Hosp. and good scope for surgery. Choice of two houses. Prem. 2 yrs.' purchase.
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6. EAST COAST.—Seaport Town.—Old-estab. middle- and working-class PRACTICE. Average cash receipts for the past three years £1835, including panel of over 1000. Fees 2s. 6d. to 10s. 6d. Midwifery has been discouraged, but much can be had at fees from 5 gns. upwards. Good house with 2 reception, 5 bedrooms, &c. Electric light. Small garden. Price for freehold £1350, part on mortgage. Premium 1½ years' purchase, part by instalments. Ill-health reason for sale.
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11. SOUTH COAST.—Popular and Favourite Watering Place.—Old-estab. increasing mixed-class PRACTICE, producing last year nearly £1600 (this year to end of May £880) including panel of over 1150. Visits 3s. 6d. upwards. Mids. from 4 gns., 30 cases yearly. House contains eight rooms with usual offices and garden. Price for freehold £1450 (£1000 at least obtained on mortgage). Held by Vendor over 9 years.
12. EAST COAST.—Popular Resort.—Old-estab. non-panel better- and middle-class PRACTICE, offering excellent scope. There is a Hospital with over 80 beds. Average cash receipts for past three years £2400. Fees 3s. 6d. to 10s. 6d. and upwards. Very little Mid. Very good private residence near sea, with ample accommodation. This need not be taken, as Purchaser could reside at suitable central surgery premises. Premium for prompt sale, owing ill-health, only £1500.
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14. PARTNERSHIP.—SOUTH-WESTERN COUNTY.—In a large seaport town, the third-share (to commence with) of an old-estab. mixed class PRACTICE averaging £3200 p.a., including panel of over 2000 is offered. Visits 3s. 6d. to 10s. 6d. Midwifery discouraged, about 30 cases yearly at 3 gns. upwards. Expenses light. Suitable residence available. Premium 2 years' purchase.
15. EAST COAST.—ASSISTANTSHIP with view to PARTNERSHIP.—A one-third share in a very sound mixed class Practice, producing £2300 p.a. and offering excellent scope. Panel of about 1000, and good appts. Choice of houses. Premium 2 years' purchase.
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17. EASTERN SUBURB.—PARTNERSHIP, with succession. A half share in an old-estab. Practice averaging over £1100 p.a., including panel of 1145. No Midwifery, but scope for this. Suitable house, with electric light and garden. Price £800 . Premium 2 years' purchase.
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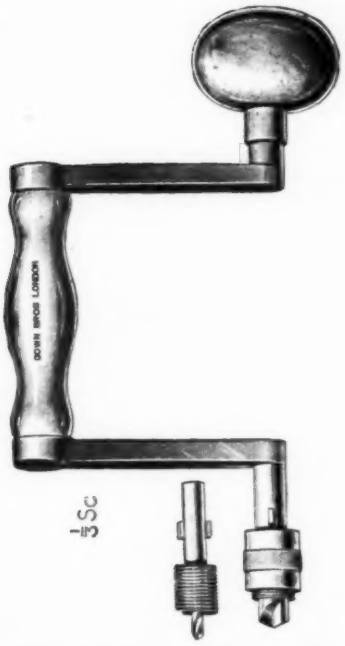

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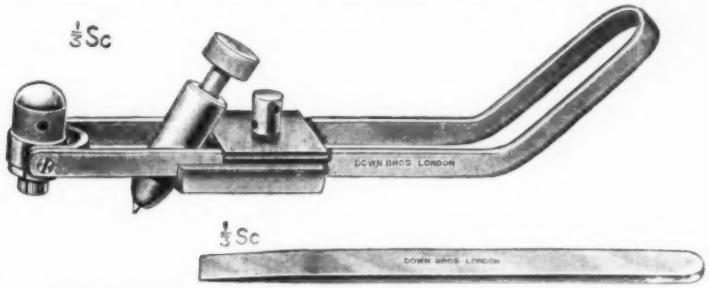

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